Javascript

CS 360 Internet Programming

Daniel Zappala

Brigham Young University
Computer Science Department
Why Javascript?

- web database applications provide dynamic server-side content
- Javascript provides dynamic client-side content
  - more responsive web user interface
  - avoid latency of talking to server
  - dynamically change HTML being displayed by browser
Features

- interpreted
- dynamic typing (delays binding of types until they are used)
- first-class functions (can take functions as arguments and return functions)
- prototypes (objects based on prototypes instead of inheritance)

Examples

```javascript
1 alert("Hello world!");
```
Examples

```javascript
1 function factorial(n) {
2     if (n === 0) {
3         return 1;
4     }
5     return n * factorial(n - 1);
6 }
```
Examples

```javascript
function displayClosure() {
    var count = 0;
    return function () {
        return ++count;
    }
}

var inc = displayClosure();
inc(); // returns 1
inc(); // returns 2
inc(); // returns 3
```
Examples

```html
<![DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<html>
  <head>
    <title>simple page</title>
  </head>
  <body>
    <h1 id="header">This is JavaScript</h1>
    <script type="text/javascript">
      document.write('Hello World!');
      // holds a reference to the <h1> tag
      var h1 = document.getElementById("header");
      // accessing the same <h1> element
      h1 = document.getElementsByTagName("h1")[0];
    </script>
    <noscript>
      Your browser either does not support JavaScript,
      or has JavaScript turned off.
    </noscript>
  </body>
</html>
```
Javascript vs Java

- JavaScript has no relationship to Java
- Javascript cannot draw, is not multi-threaded, cannot use network or other I/O
- Javascript is becoming what Java meant to be
  - lightweight, downloadable program that runs in browser and is compatible across many platforms
  - does much of what Java applets do, with a fraction of the resources
Variables

1 // local variable
2 var x = 12;
3 // global variable
4 y = 12;
## Operators

- **comparison**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&gt;</td>
</tr>
<tr>
<td>2</td>
<td>&lt;</td>
</tr>
<tr>
<td>3</td>
<td>&gt;=</td>
</tr>
<tr>
<td>4</td>
<td>&lt;=</td>
</tr>
<tr>
<td>5</td>
<td>!=</td>
</tr>
<tr>
<td>6</td>
<td>==</td>
</tr>
<tr>
<td>7</td>
<td>!</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>&amp;&amp;</td>
</tr>
</tbody>
</table>
Operators

- assignment

1 +
2 −
3 *
4 /
5 %
6 =
7 +=
8 −=
9 ++
10 --
Control

1 if ( boolean statement ) {
2   ...
3 } else {
4 }

Javascript
```javascript
switch (variable) {
    case 1:
    case 2:
    case default:
}
```
while (boolean condition) {
  ...
}
do {
  ...
} while (boolean condition);
```javascript
function add(a, b) {
  return a + b;
}

a(5, 3);
```
Objects

function Person(name, age) {
    this.name = name;
    this.age = age;
}

var p = new Person('Annie', 23);
document.write('Name: ' + p.name);
Functions

```javascript
function show() {
    document.write('Name: ' + this.name);
}

function Person(name, age) {
    this.name = name;
    this.age = age;
    this.show = show();
}

var p = new Person('Annie', 23);
p.show();
```
## Functions

```javascript
function Person(name, age) {
    this.name = name;
    this.age = age;
    this.show = function () {
        document.write('Name: ' + this.name);
    }
}

var p = new Person('Annie', 23);
p.show();
```
window

1. `window.location.href`
2. `window.location.hostname`
3. `window.history.length`
4. `window.history.back()`
1. `document.getElementById("header");`
2. `document.getElementsByTagName("h1");`
Event Handlers

1. `<input type="button" onclick="javascript:doButton()">`
2. `<select onChange="javascript:doChange()">`
3. `<a onClick="javascript:activate()">`
4. `<form onSubmit="javascript:validate()">`
5. `<body onLoad="javascript:init()">`