Web Inspector and Modern JavaScript

Session 512
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Web Inspector and Modern JavaScript
Web Inspector and Modern JavaScript
Modern JavaScript and Web Inspector
Modern JavaScript
JavaScript
ECMAScript
ECMAScript 6
Modern JavaScript

Language highlights

Math Additions
Maps and Sets
Destructuring
Spread Operator
For-of Loops
Promises
Modern JavaScript
Language highlights

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Math Additions
Modern JavaScript
Math Additions

- log10
- sinh
- asinh
- log1p
- fround
- expm1
- hypot
- trunc
- cosh
- log2
- imul
- atanh
- acosh
Modern JavaScript

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Modern JavaScript
Map Object
Modern JavaScript

Map Object

var simpleMap = {};

var simpleMap = {};  
simpleMap["foo"] = 42;
Modern JavaScript
Map Object

```javascript
var simpleMap = {};
simpleMap['foo'] = 42;
delete simpleMap['foo'];
```
Modern JavaScript
Map Object

```javascript
var simpleMap = new Map;
simpleMap.set("foo", 42);
simpleMap.delete("foo");
```
Modern JavaScript

Map with Object Keys

```javascript
var nodeMap = new Map;
nodeMap.set(node, data);
nodeMap.get(node).foo;
```
var nodeMap = new WeakMap;
nodeMap.set(node, data);
node.remove();
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Destructuring Arrays
foo() { return [1, 2] }
Modern JavaScript

Destructuring Arrays

```javascript
foo() { return [1, 2] }

var result = foo();
```
foo() { return [1, 2] }

var result = foo();
var alpha = result[0];
foo() { return [1, 2] }

var result = foo();
var alpha = result[0];
var beta = results[1];
Modern JavaScript

Destructuring Arrays

```javascript
foo() { return [1, 2] }

var [alpha, beta] = foo();
```
Modern JavaScript
Destructuring Objects
foo() { return {x: 4, y: 9} }
Modern JavaScript
Destructuring Objects

```javascript
foo() { return {x: 4, y: 9} }

var result = foo();
```
Modern JavaScript

Destructuring Objects

```javascript
foo() { return {x: 4, y: 9} }

var result = foo();
var myX = result.x;
```
foo() { return {x: 4, y: 9} }

var result = foo();
var myX = result.x;
var y = result.y;
Modern JavaScript

Destructuring Objects

```javascript
foo() { return {x: 4, y: 9} }

var {x: myX, y} = foo();
```
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function foo(a, b, c) {}
var args = [1, 2, 3];
foo.apply(null, args);
Modern JavaScript
Spread Operator for calls

```javascript
function foo(a, b, c) {} 
var args = [1, 2, 3];
foo(...args);
```
Modern JavaScript
Spread Operator with constructors

```javascript
var parts = fetchParts();
var d = new Date(...parts);
```
Modern JavaScript

Spread Operator in array literals

```javascript
var a = [1, 2, 3];
var z = [5, 6, 7];
var all = [1, 2, 3, 4, 5, 6, 7];
```
Modern JavaScript

Spread Operator in array literals

```javascript
var a = [1, 2, 3];
var z = [5, 6, 7];
var all = [...a, 4, ...z];
```
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Traditional loops

```javascript
var len = items.length;
for (var i = 0; i < len; ++i)
  total += items[i];
```
items.forEach(function(item) {
    total += item;
});
for (var item of items)
    total += item;
for (var value of someSet)
  process(value);
for (var [k, v] of someMap)
process(k, v);
for (var [node] of nodeMap)
    node.remove();
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Promises

load(url);
var data = load(url);
Modern JavaScript
Promises

```javascript
load(url, function(a) {
  load(a.url, process);
});
```
Modern JavaScript

Promises

```javascript
load(url, function(a) {
    load(a.url, function(b) {
        load(b.url, process);
    });
});
```
Modern JavaScript

Promises

```javascript
load(url).then(function(a) {
    return load(a.url);
}).then(function(b) {
    return load(b.url);
}).then(process);
```
Modern JavaScript
Waiting for all Promises

```javascript
var imgs = [load(a), load(b)];
Promise.all(imgs).then(done);
```
Modern JavaScript

Racing your Promises

```javascript
var imgs = [load(a), load(b)];
Promise.race(imgs).then(done);
```
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Modern JavaScript and Web Inspector
Web Inspector
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en-US" lang="en-US">
  <head></head>
  <body class="home"/>
</html>
Web Inspector

New features

Mac App inspection
JavaScriptCore support
Source Code Timelines
Breakpoint Probes
Accessibility details
Color and Gradient editing
Web Inspector

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"com.apple.security.get-task-allow"
Web Inspector

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```javascript
var lastBallY = 0;

function nextMove(paddle, ball) {
  var ballY = ball.middleY;
  var ballDirection = ballY > lastBallY ? UpDirection : DownDirection;
  lastBallY = ballY;

  if (ballY > paddle.top)
    return UpDirection;
  if (ballY < paddle.bottom)
    return DownDirection;
}

return ballDirection;
```

```javascript
paddle
  ➜ Shape
  ➜ paddle.top
  ➜ 196
  ➜ paddlemiddleX ➜ 2
  ➜ middleY
  ➜ paddle.middleY
```
| ball position: 373.5, 309 |
| ball position: 377.5, 305 |
| ball position: 381.5, 361 |
| ball position: 385.5, 357 |
| ball position: 389.5, 353 |
| ball position: 393.5, 349 |
| ball position: 397.5, 345 |
| ball position: 401.5, 341 |
| ball position: 405.5, 337 |
| ball position: 409.5, 333 |
| ball position: 413.5, 329 |
| ball position: 417.5, 325 |
| ball position: 421.5, 321 |
| ball position: 425.5, 317 |
| ball position: 429.5, 313 |
| ball position: 433.5, 309 |
| ball position: 437.5, 305 |
| ball position: 441.5, 301 |
| ball position: 445.5, 297 |
| ball position: 449.5, 293 |
| ball position: 453.5, 289 |
| ball position: 457.5, 285 |
| ball position: 461.5, 281 |
| ball position: 465.5, 277 |
| ball position: 469.5, 273 |
| ball position: 473.5, 269 |
Web Inspector

JavaScript Source URLs

- [JSContext `evaluateScript:withSourceURL:`]

  JSEvaluateScript(..., sourceURL, ...)
Web Inspector
JavaScript Source URLs

-[JSContext evaluateScript:withSourceURL:]

JSEvaluateScript(..., sourceURL, ...)
Web Inspector

JavaScript Context Name

@interface JSContext
@property NSString *name;
@end

JSGlobalContextSetName(…)

@interface JSContext
@property NSString *name;
@end

JSGlobalContextSetName(…)

Web Inspector
JavaScript Context Name
Demo
Mac App and JavaScriptCore inspection
Web Inspector
Mac App and JavaScriptCore inspection

Any web view or JavaScript context
Only apps with “get task allow” entitlement
Name your contexts, pages, and scripts
Web Inspector

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function splash() {
}

function registerEvents() {
    addEvent(document, "keydown", onKeyDown);
}

function addEvent(el, event, handler) {
    if (el.addEventListener)
        el.addEventListener(event, handler, false);
    else if (el.attachEvent)
        el.attachEvent("on" + event, handler);
}

function onKeyDown(e) {
    var keyCode = e.keyCode;
    switch (keyCode) {
    case 13: // enter
        dropPiece();
        break;
    case 32: // space
        if (!running) {
            startGame();
            return;
        }
    case 38: // up
        rotateActivePiece();
        break;
    case 39: // left
        moveActivePiece(1, 0);
        break;
    case 37: // right
        moveActivePiece(-1, 0);
        break;
    case 40: // down

Web Inspector

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event.pageX
event.pageY
event.button
event.altKey
...

Demo
Source Code Timelines and Breakpoint Probes
Web Inspector

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Example 1: Number Guessing Game

```
<input type="text" placeholder="Enter a number">
<button type="button" value="Close" id="alert1_close">Close</button>
```

**Attributes**

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>alert1_close</td>
</tr>
<tr>
<td>type</td>
<td>button</td>
</tr>
<tr>
<td>value</td>
<td>Close</td>
</tr>
</tbody>
</table>

**Properties**

**Event Listeners**

**Accessibility**

- Role: button (default)
- Clickable: Yes
- Focused: No
Web Inspector

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Summary
Summary

Take advantage of new JavaScript language features
Summary

Take advantage of new JavaScript language features
Web Inspector is now available for Mac apps
Summary

Take advantage of new JavaScript language features
Web Inspector is now available for Mac apps
Enjoy debugging your JavaScriptCore contexts
Take advantage of new JavaScript language features
Web Inspector is now available for Mac apps
Enjoy debugging your JavaScriptCore contexts
Make your web apps accessible
Summary

Take advantage of new JavaScript language features
Web Inspector is now available for Mac apps
Enjoy debugging your JavaScriptCore contexts
Make your web apps accessible
Be a colorful person
More Information

Evangelism
evangelism@apple.com

Developer Technical support
http://developer.apple.com/contact

Apple Developer Forums
http://devforums.apple.com
# Related Sessions

<table>
<thead>
<tr>
<th>Session</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>Improving the Accessibility and Usability of Complex Web Applications</td>
<td>Marina</td>
<td>Friday 9:00AM</td>
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<tr>
<td>Designing Responsive Web Experiences</td>
<td>Marina</td>
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<td>Media Lab B</td>
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<td></td>
</tr>
<tr>
<td>Thursday 2:00PM</td>
<td></td>
<td></td>
</tr>
</tbody>
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