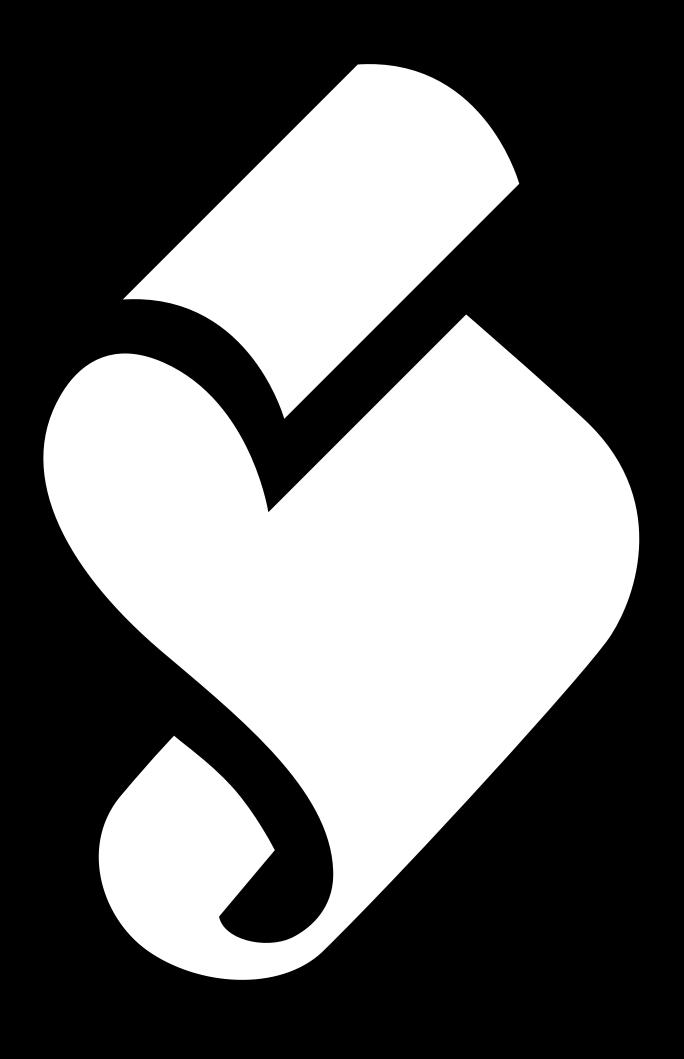
Web Inspector and Modern JavaScript

Session 512
Timothy Hatcher
WebKit Developer Experience Manager

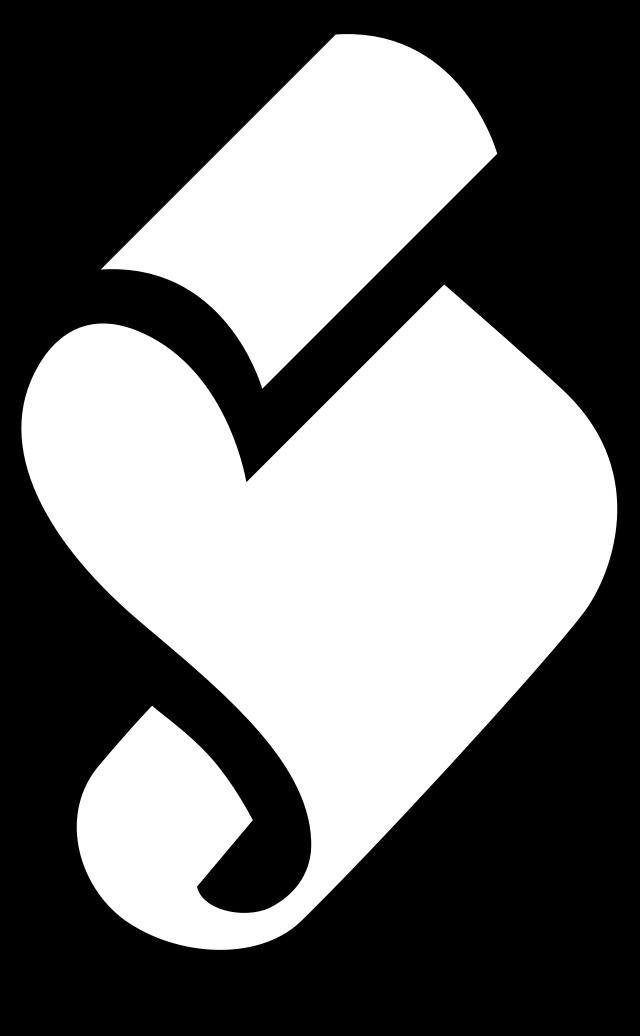
Web Inspector and Modern JavaScript

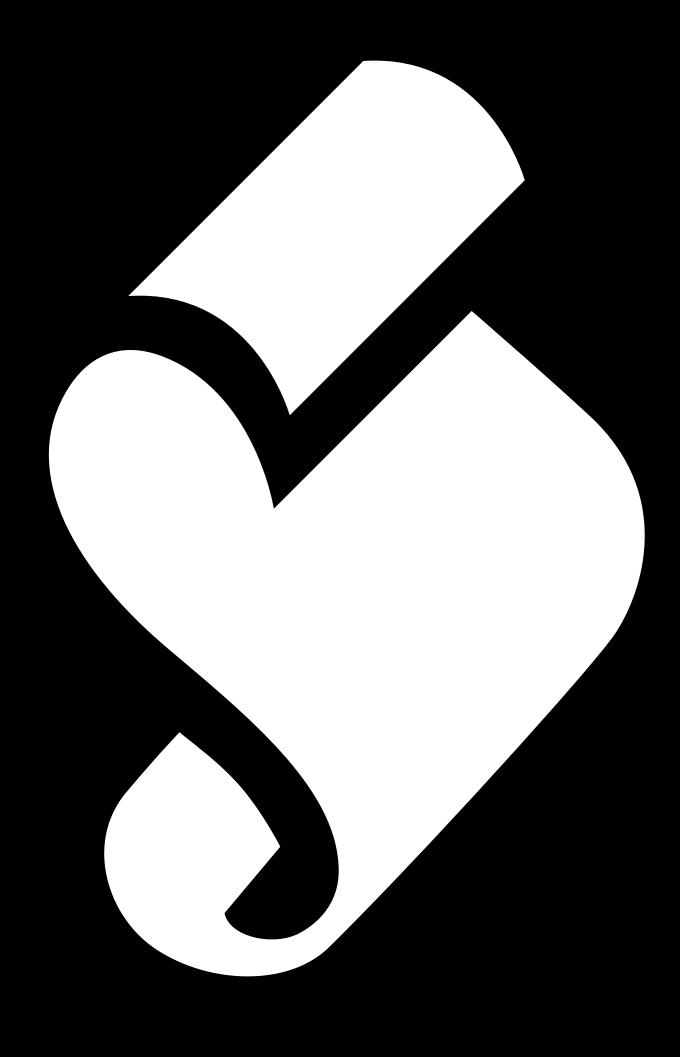
Web Inspector and Modern JavaScript

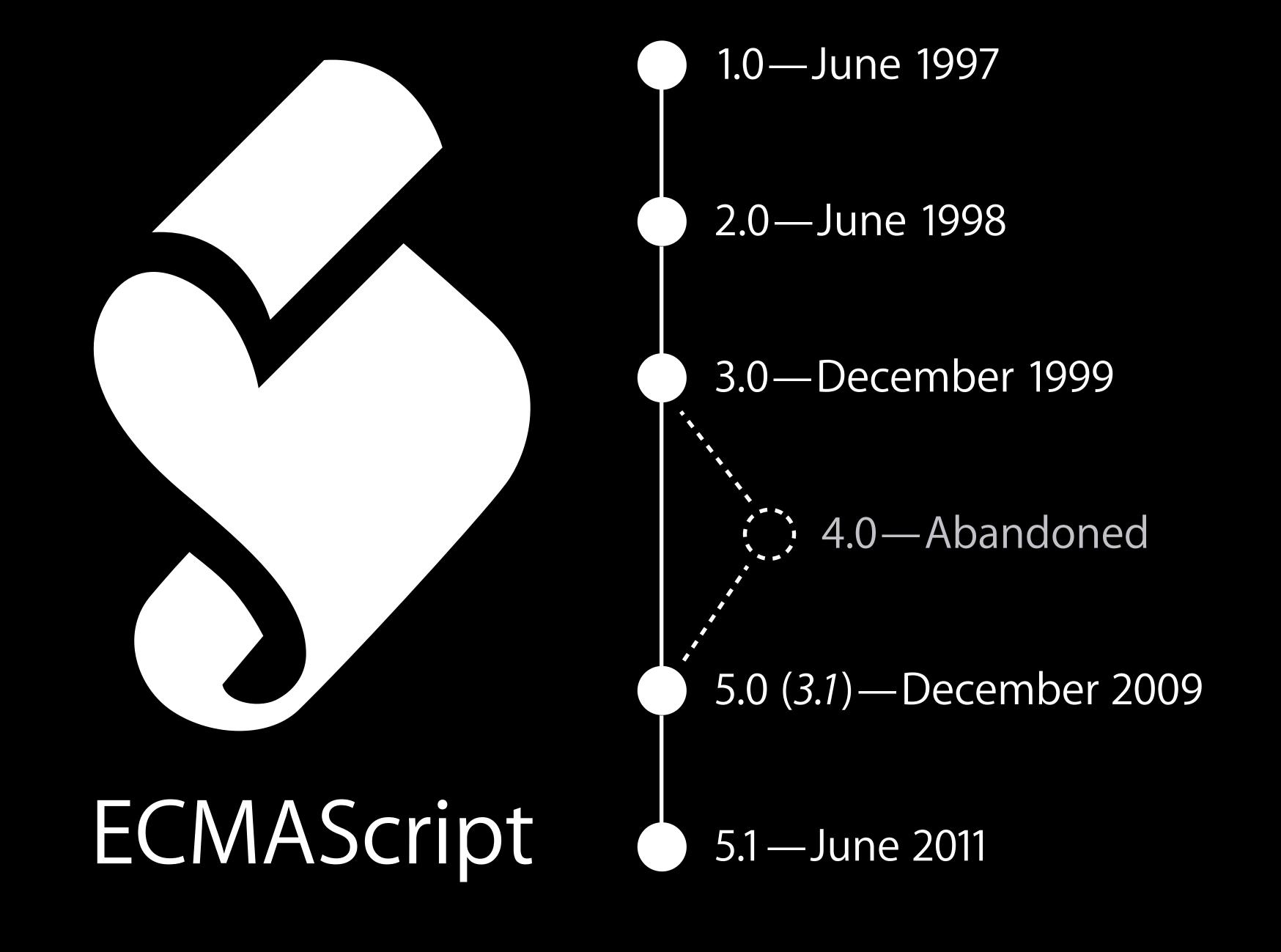
Modern JavaScript and Web Inspector

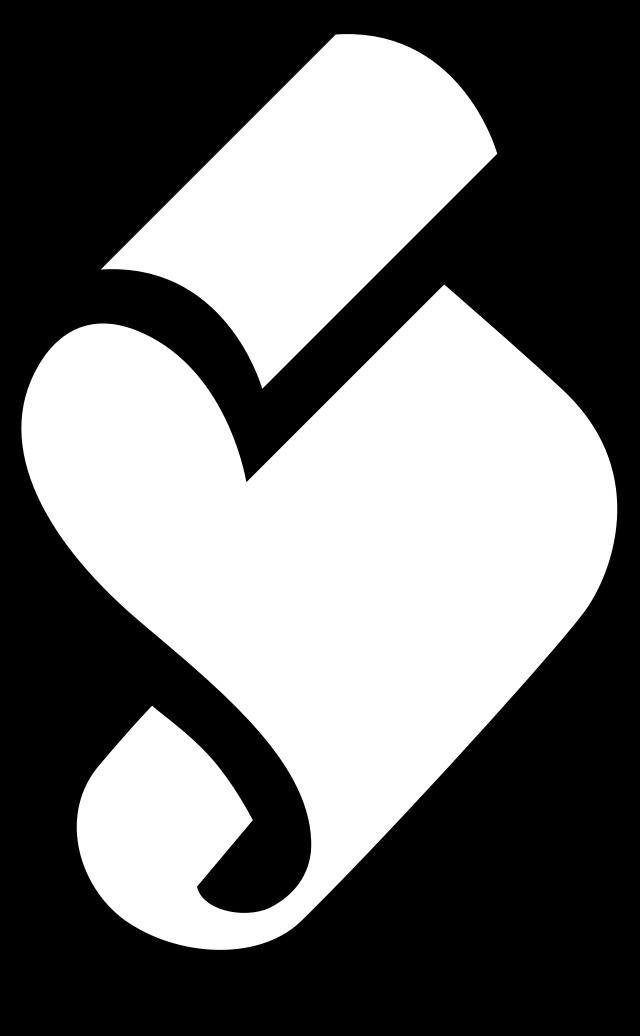


JavaScript



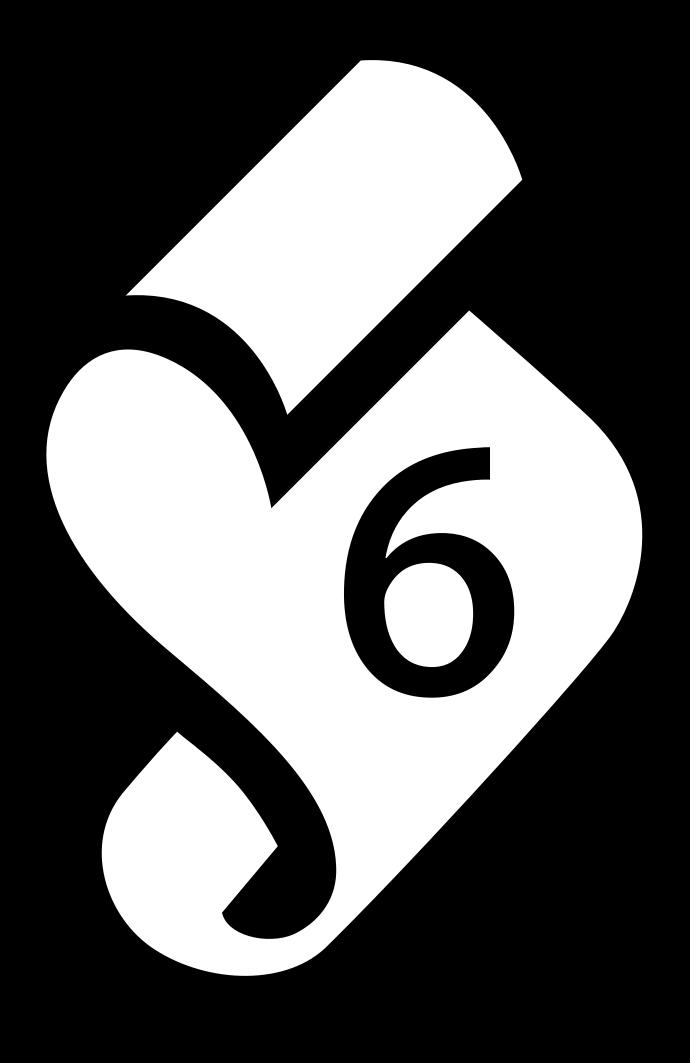




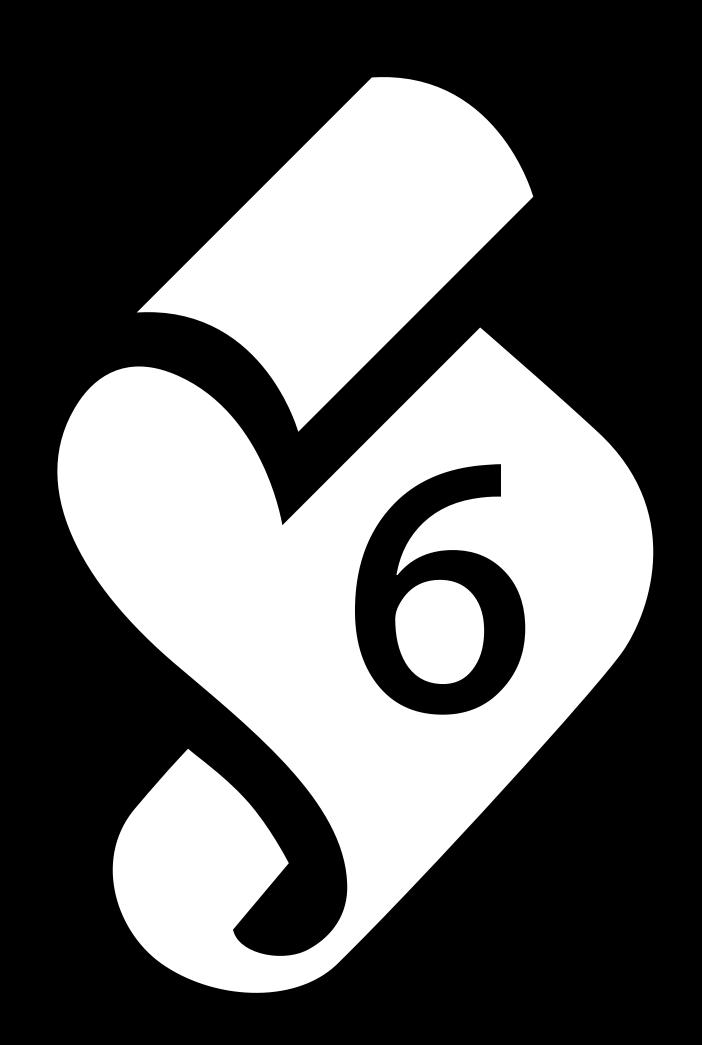


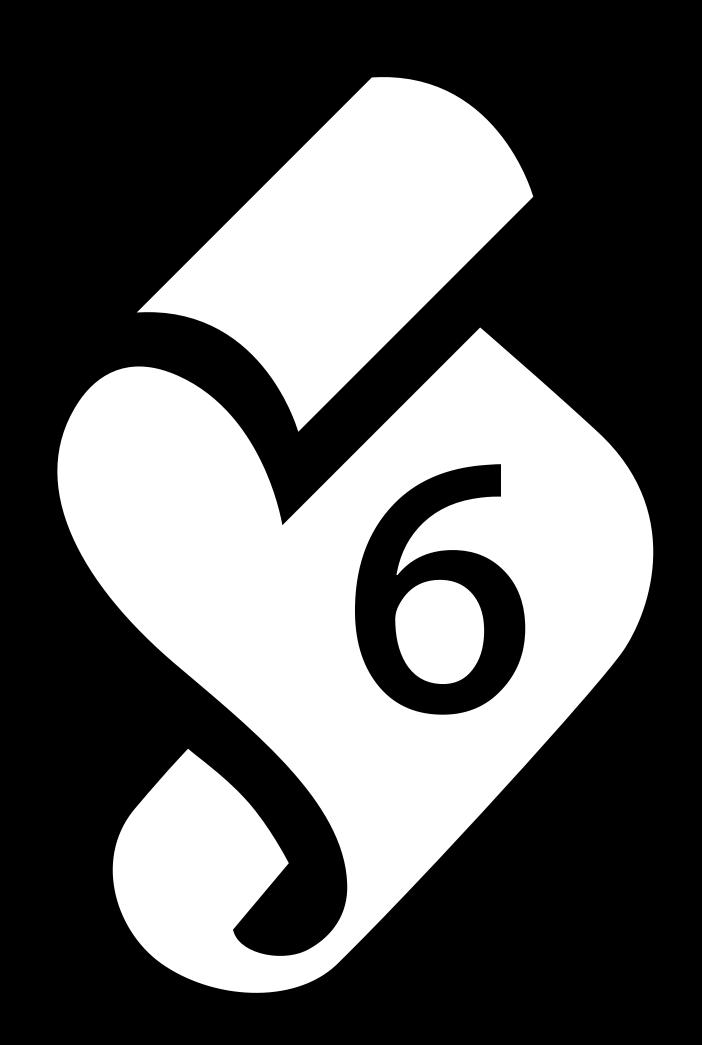






JavaScript





Destructuring

Spread Operator

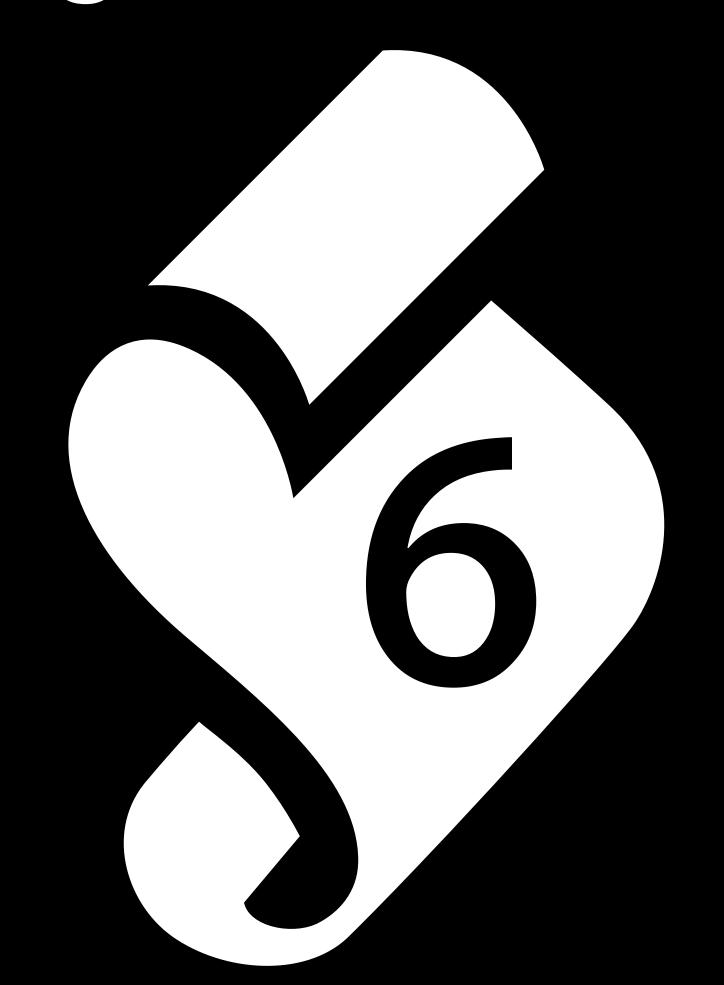


Maps

Math Additions

Iterators

Promises



Sets

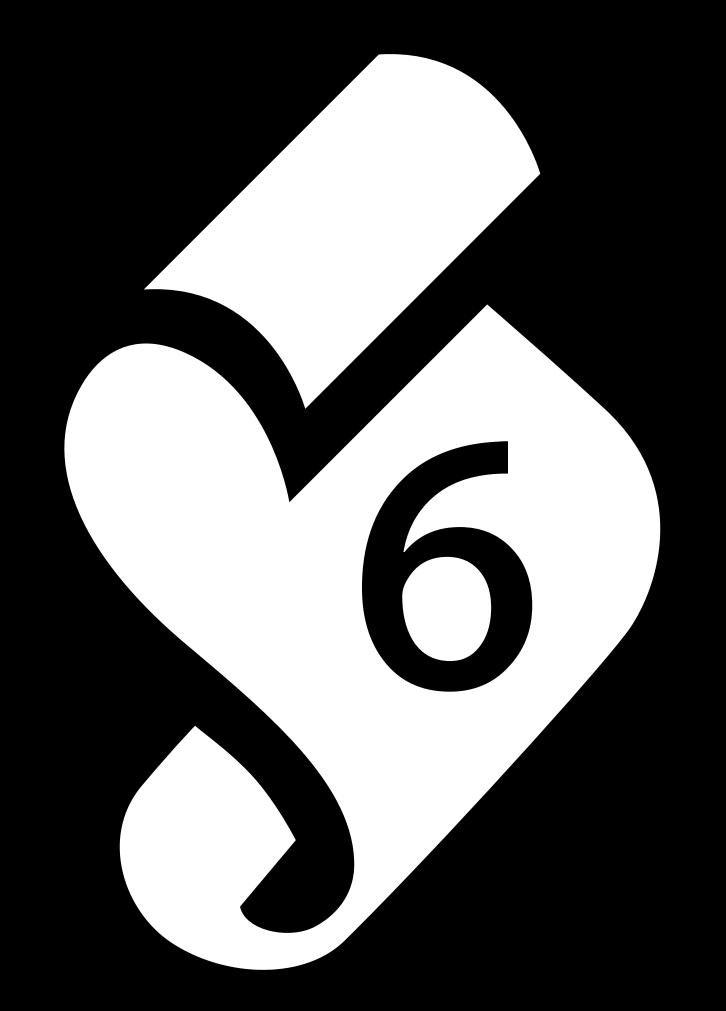
For-of Loops

Computed Properties

Weak Maps

String Additions







Language highlights

Math Additions

Maps and Sets

Destructuring

Spread Operator

For-of Loops

Promises

Modern JavaScript Language highlights

Math Additions

Maps and Sets

Destructuring

Spread Operator

For-of Loops

Promises

Math Additions

Math Additions





Modern JavaScript Language highlights

Math Additions

Maps and Sets

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Promises

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For-of Loops

Promises

Map Object

```
var simpleMap = {};
```

```
var simpleMap = {};
simpleMap["foo"] = 42;
```

```
var simpleMap = {};
simpleMap["foo"] = 42;
delete simpleMap["foo"];
```



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

Modern JavaScript Map with Object Keys



```
var nodeMap = new Map;
nodeMap.set(node, data);
nodeMap.get(node).foo;
```

Map with Weak References



```
var nodeMap = new WeakMap;
nodeMap.set(node, data);
node.remove();
```

Modern JavaScript Language highlights

Math Additions

Maps and Sets

Destructuring

Spread Operator

For-of Loops

Promises

Modern JavaScript Language highlights

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Maps and Sets

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For-of Loops

Promises

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

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

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

Destructuring Arrays

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

Destructuring Arrays



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

```
var [alpha, beta] = foo();
```

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

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

```
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;
```



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

Modern JavaScript Language highlights

Math Additions

Maps and Sets

Destructuring

Spread Operator

For-of Loops

Modern JavaScript Language highlights

Math Additions

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Destructuring

Spread Operator

For-of Loops

Modern JavaScript Spread Operator for calls

```
function foo(a, b, c) {}
var args = [1, 2, 3];
foo.apply(null, args);
```

Modern JavaScript Spread Operator for calls



```
function foo(a, b, c) {}
var args = [1, 2, 3];
foo(...args);
```

Spread Operator with constructors



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

Spread Operator in array literals

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

Spread Operator in array literals



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

Modern JavaScript Language highlights

Math Additions

Maps and Sets

Destructuring

Spread Operator

For-of Loops

Modern JavaScript Language highlights

Math Additions

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Spread Operator

For-of Loops

Modern JavaScript Traditional loops

```
var len = items.length;
for (var i = 0; i < len; ++i)
  total += items[i];</pre>
```

Modern JavaScript Traditional loops

```
items.forEach(function(item) {
   total += item;
});
```

Modern JavaScript For-of Loop



```
for (var item of items)
  total += item;
```

For-of Loop and Sets



for (var value of someSet)
 process(value);

For-of Loop and Maps



```
for (var [k, v] of someMap)
  process(k, v);
```

For-of Loop and WeakMaps



```
for (var [node] of nodeMap)
  node.remove();
```

Modern JavaScript Language highlights

Math Additions

Maps and Sets

Destructuring

Spread Operator

For-of Loops

Modern JavaScript Language highlights

Math Additions

Maps and Sets

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Spread Operator

For-of Loops

Modern JavaScript Promises

load (url);



```
var data = load(url);
```

Modern JavaScript Promises

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

Modern JavaScript Promises

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

Modern JavaScript Promises



```
load(url).then(function(a) {
  return load(a.url);
}).then(function(b) {
  return load(b.url);
}).then(process);
```

Modern JavaScript Waiting for all Promises



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

Modern JavaScript Racing your Promises



```
var imgs = [load(a), load(b)];
Promise race(imgs) then(done);
```

Modern JavaScript Language highlights

Math Additions

Maps and Sets

Destructuring

Spread Operator

For-of Loops

Language highlights

Math Additions

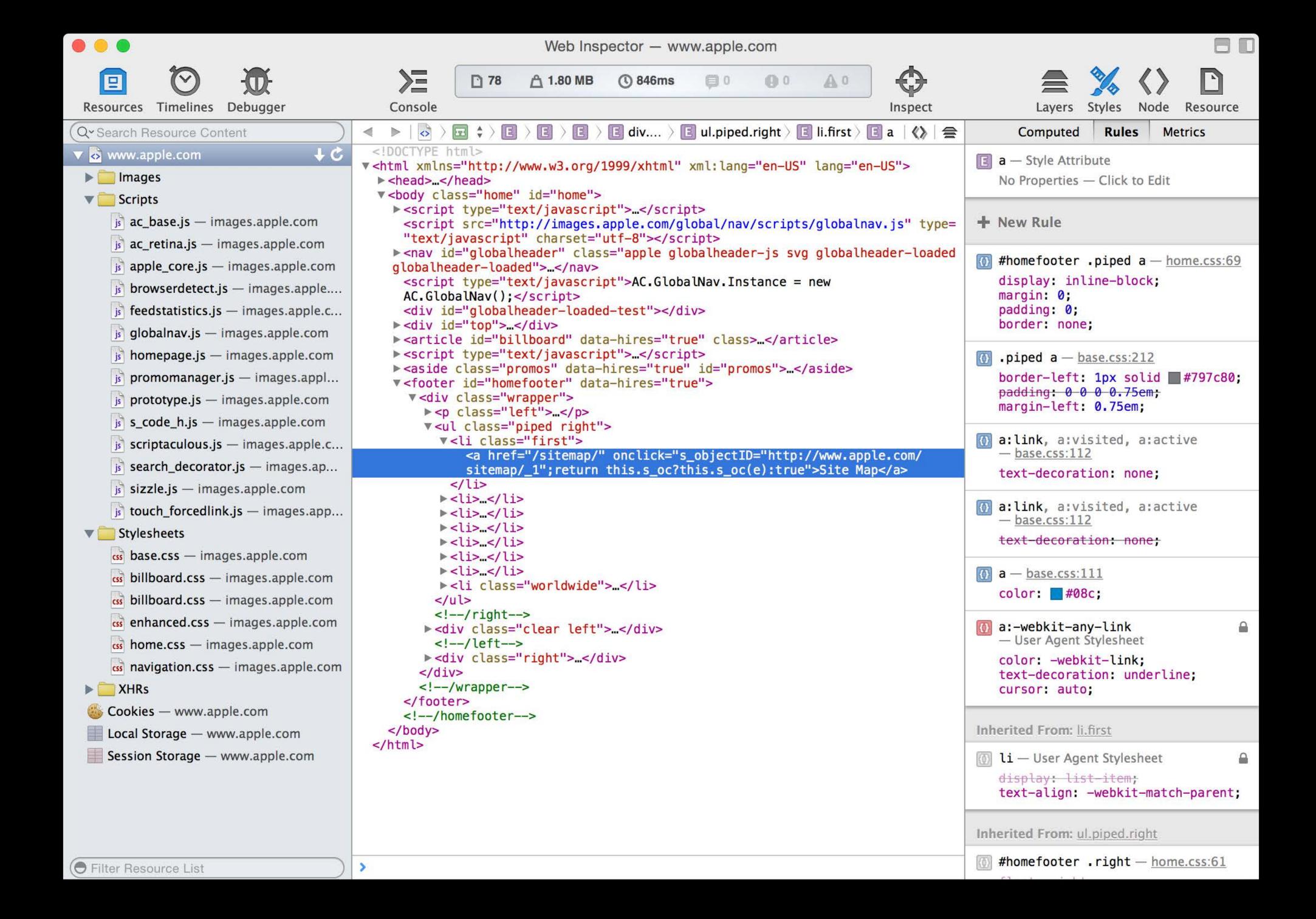
Maps and Sets

Destructuring

Spread Operator

For-of Loops

Modern JavaScript and Web Inspector

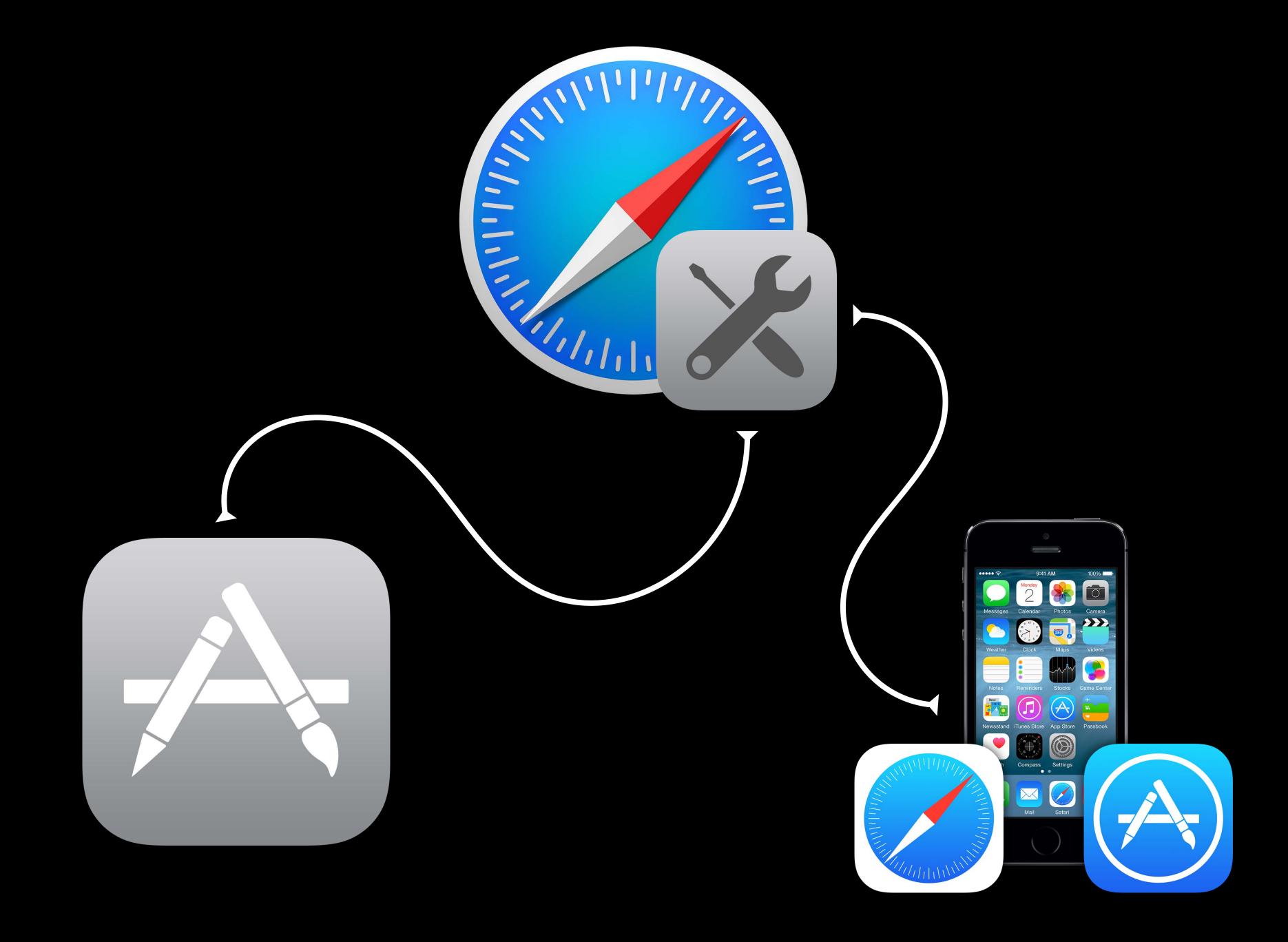


















WebKit









WebKit

JavaScriptCore

New features

Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details

Web Inspector New features

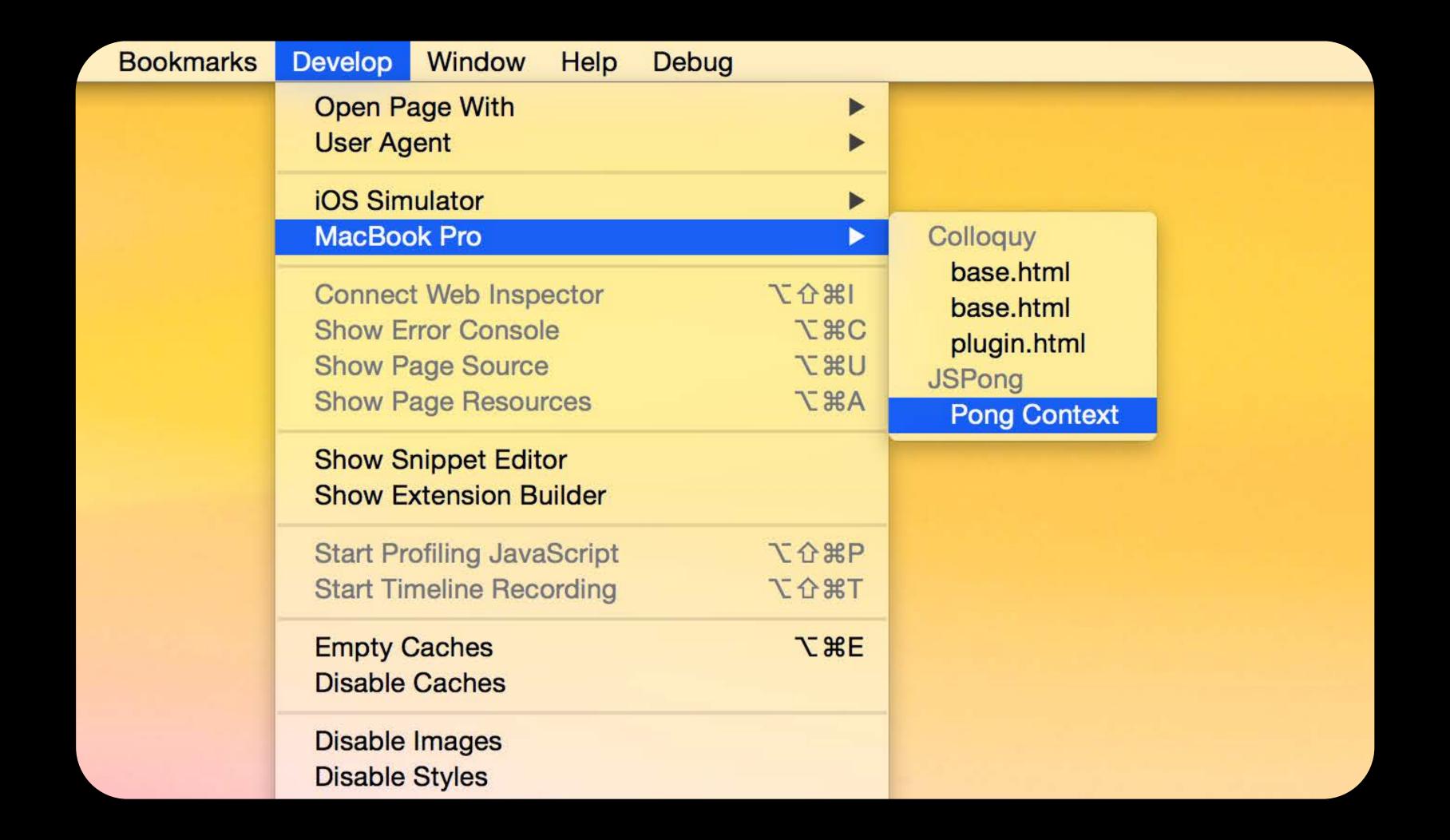
Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details





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

Web Inspector New features

Mac App inspection

JavaScriptCore support

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Accessibility details

Web Inspector New features

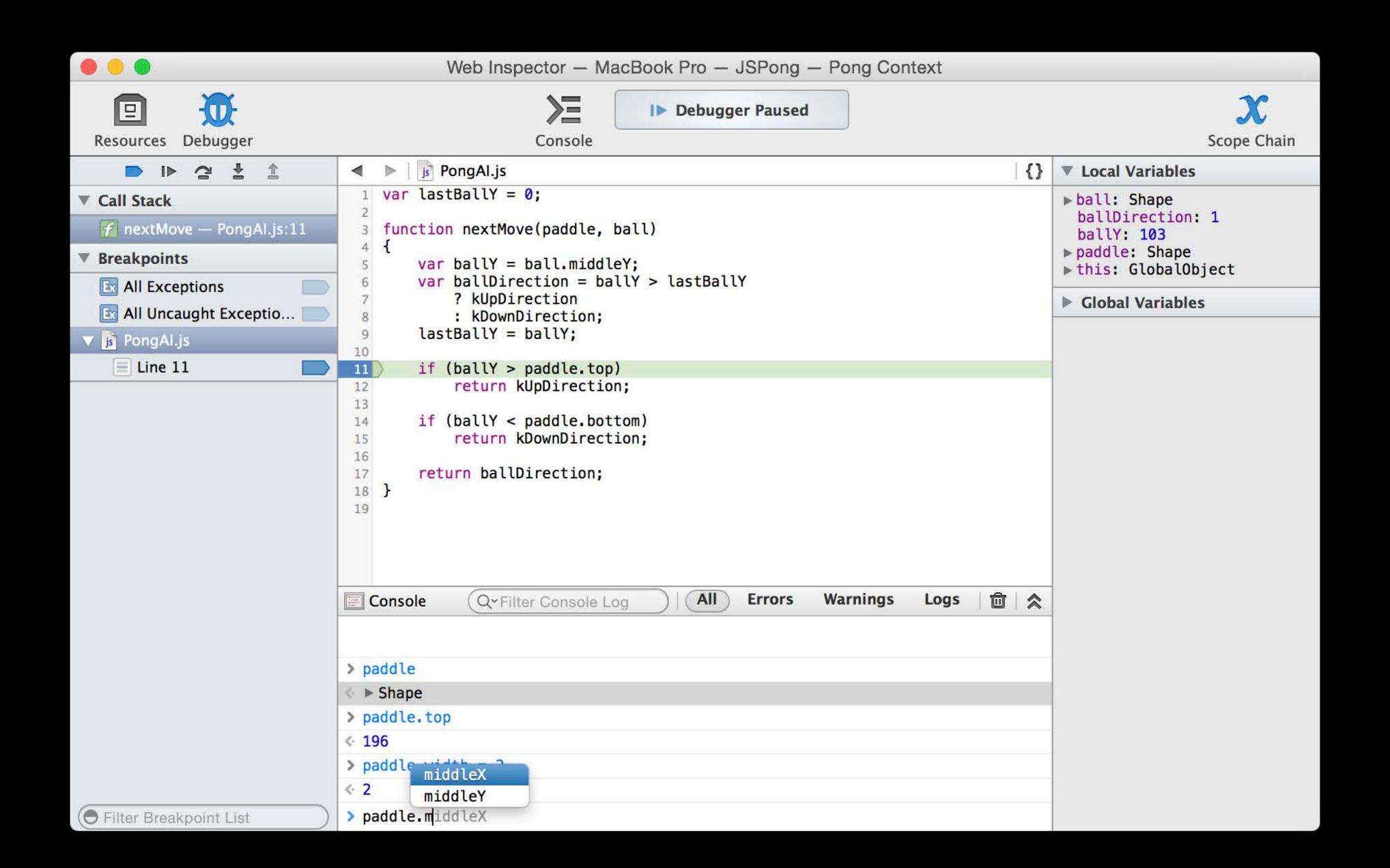
Mac App inspection

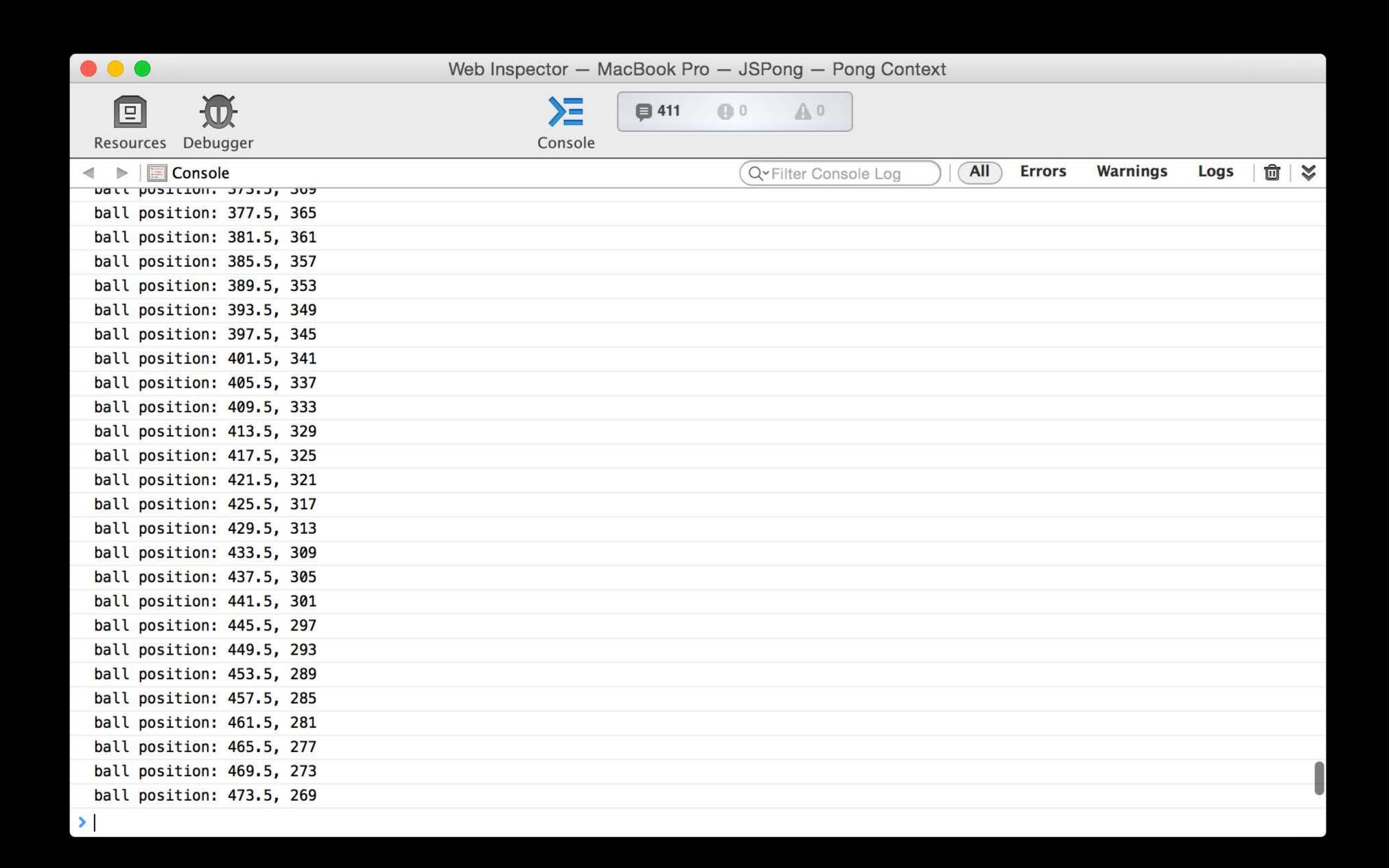
JavaScriptCore support

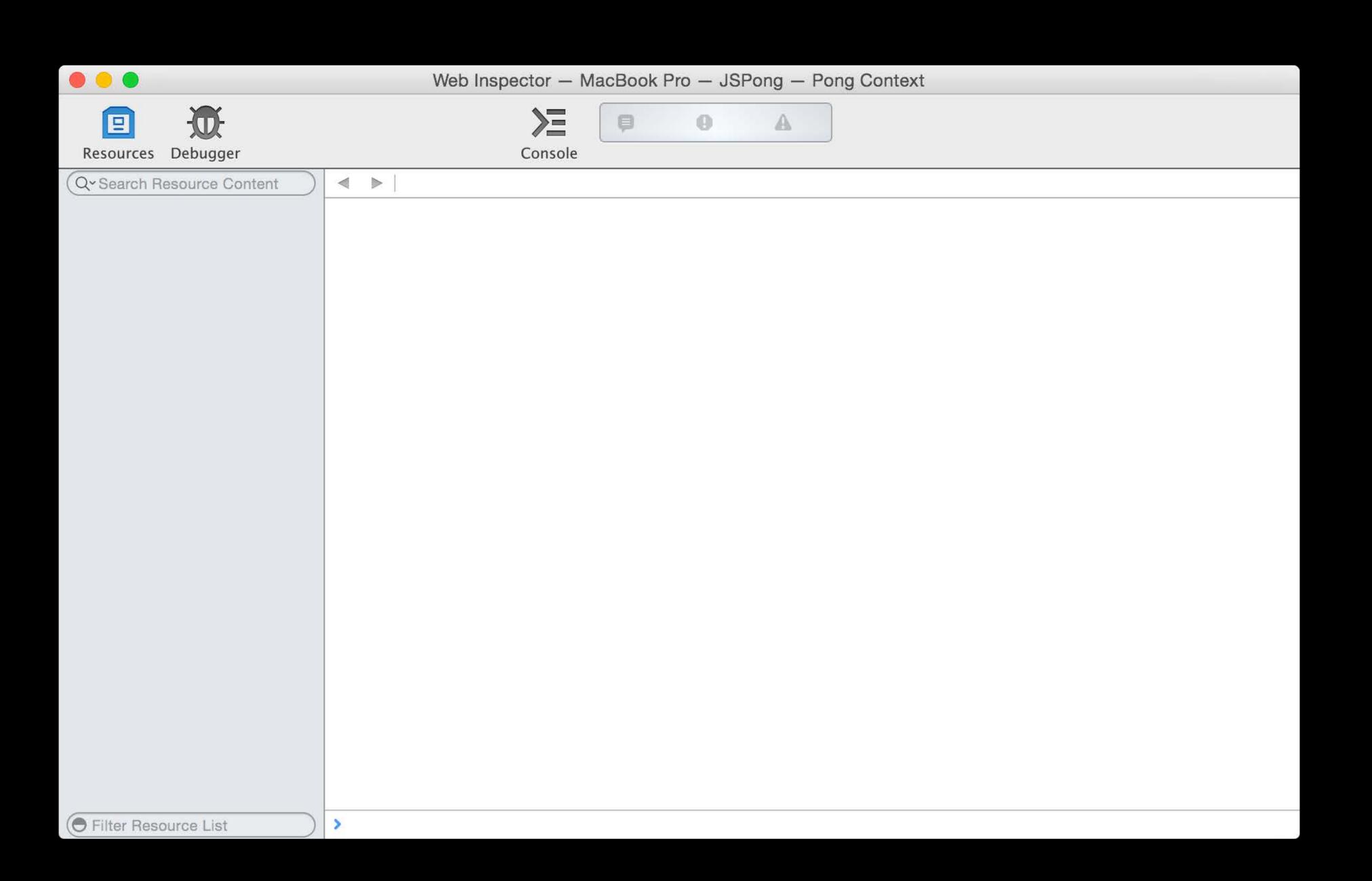
Source Code Timelines

Breakpoint Probes

Accessibility details







JavaScript Source URLs

-[JSContext evaluateScript:withSourceURL:]

JSEvaluateScript(..., sourceURL, ...)

JavaScript Source URLs



-[JSContext evaluateScript:withSourceURL:]

JSEvaluateScript(..., sourceURL, ...)

JavaScript Context Name

```
@interface JSContext
@property NSString *name;
@end
```

JSGlobalContextSetName(...)

JavaScript Context Name



```
@interface JSContext
@property NSString *name;
@end
```

JSGlobalContextSetName(...)

Demo

Mac App and JavaScriptCore inspection

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 New features

Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details

Web Inspector New features

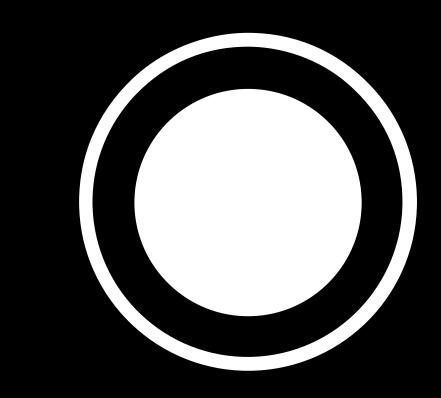
Mac App inspection

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Source Code Timelines

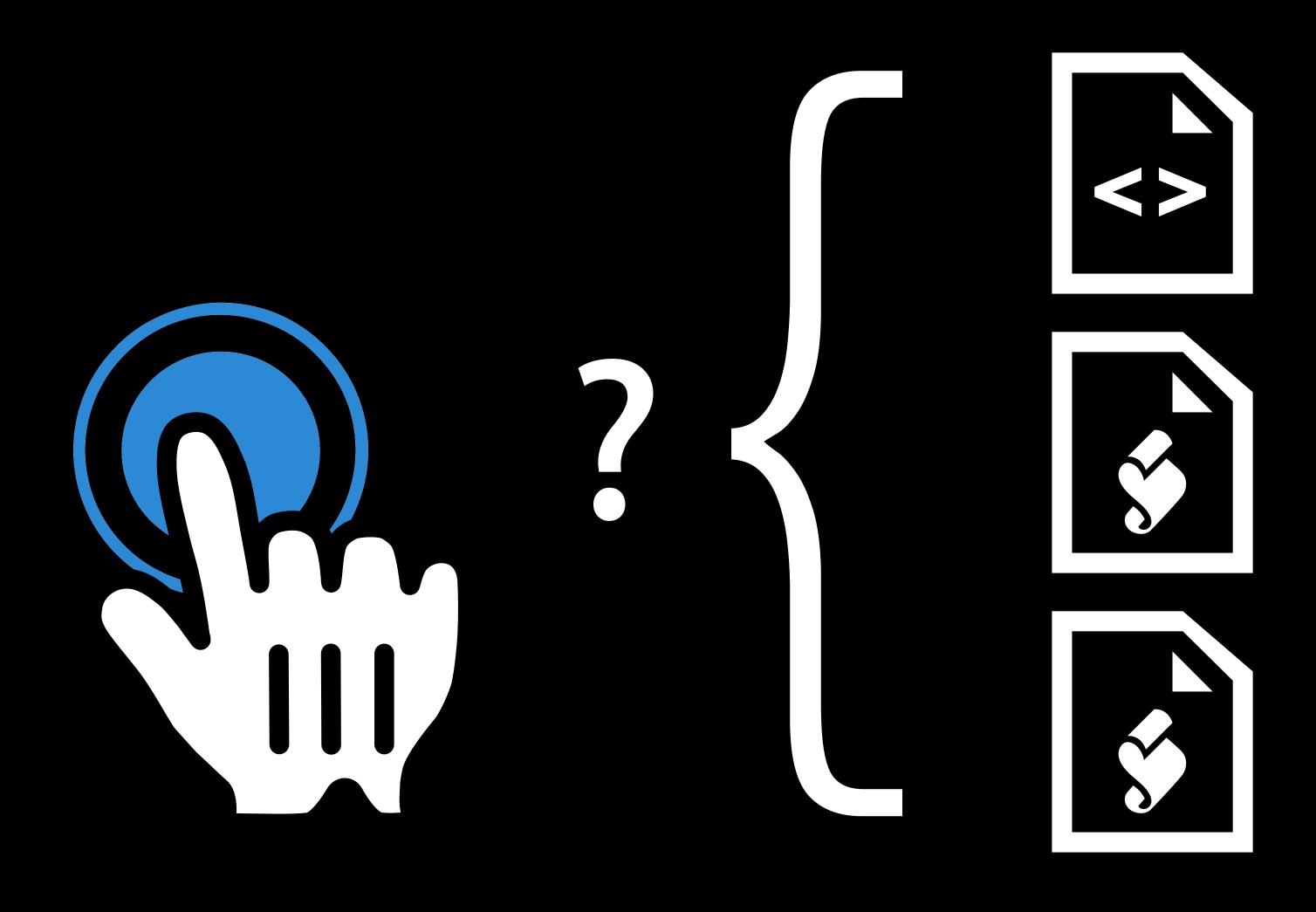
Breakpoint Probes

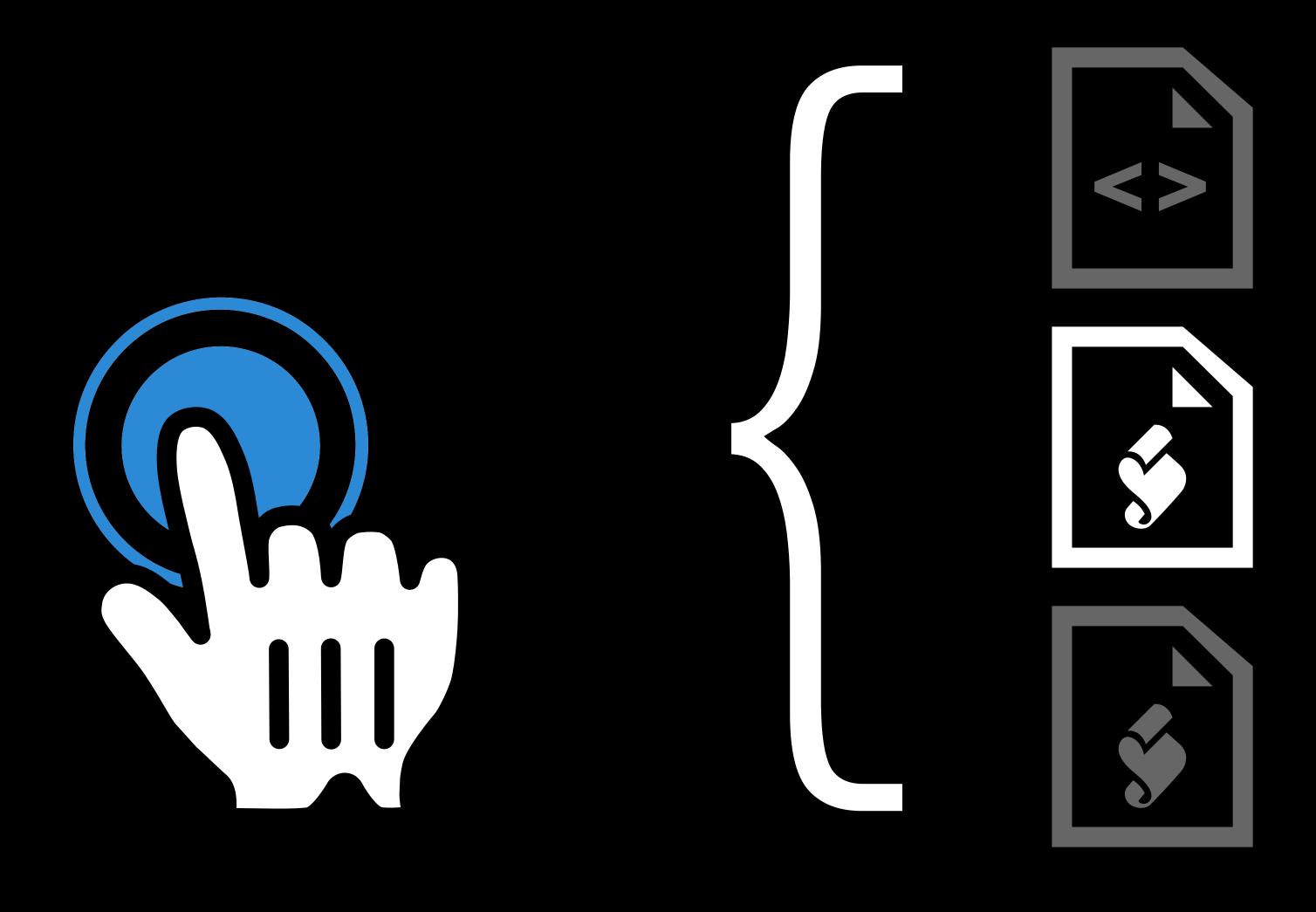
Accessibility details

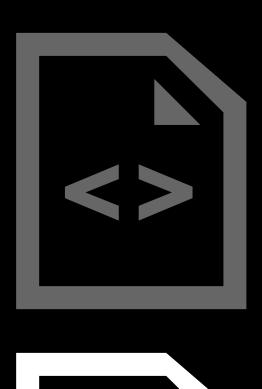


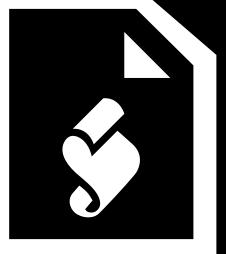


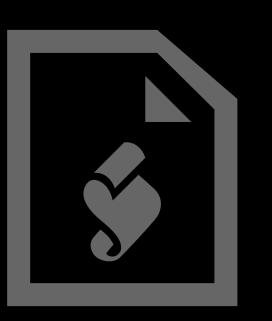




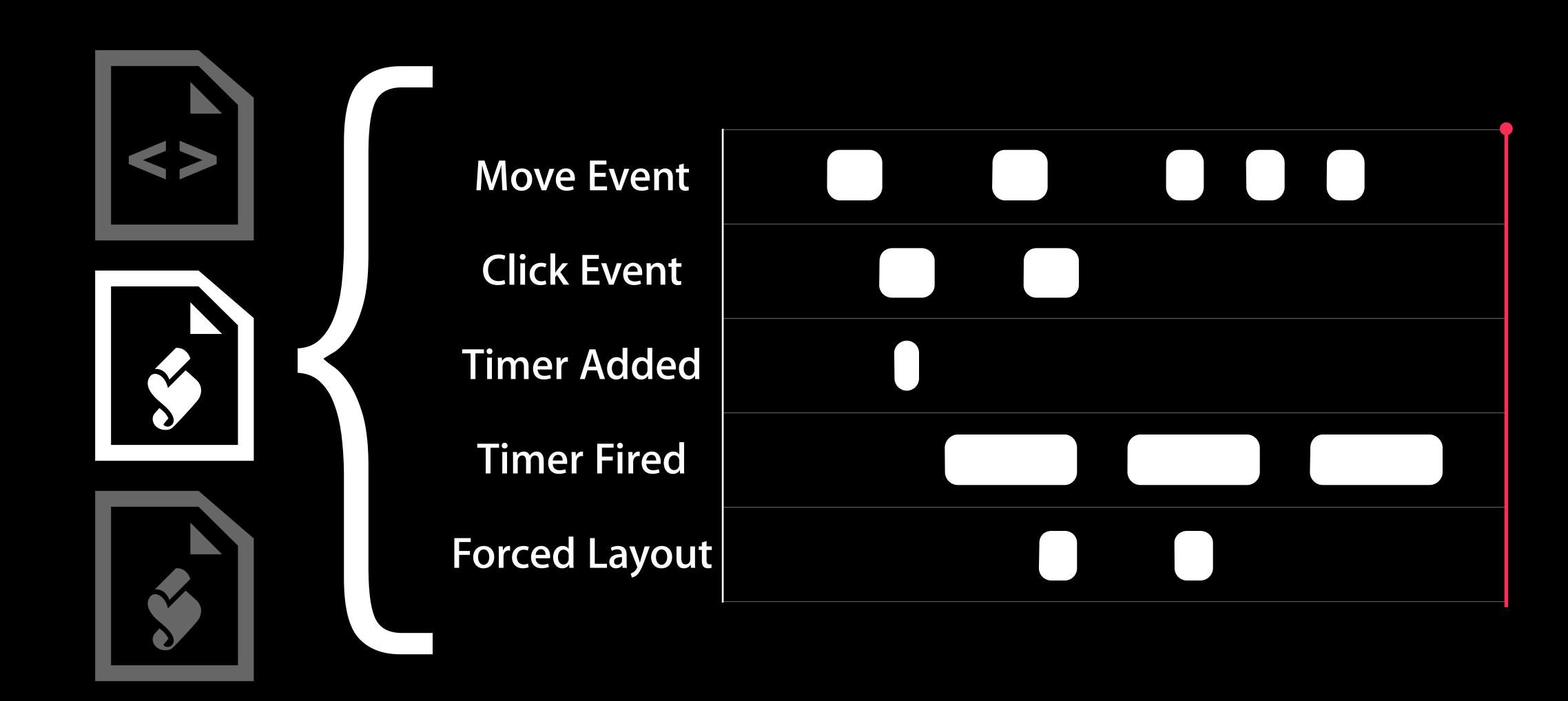


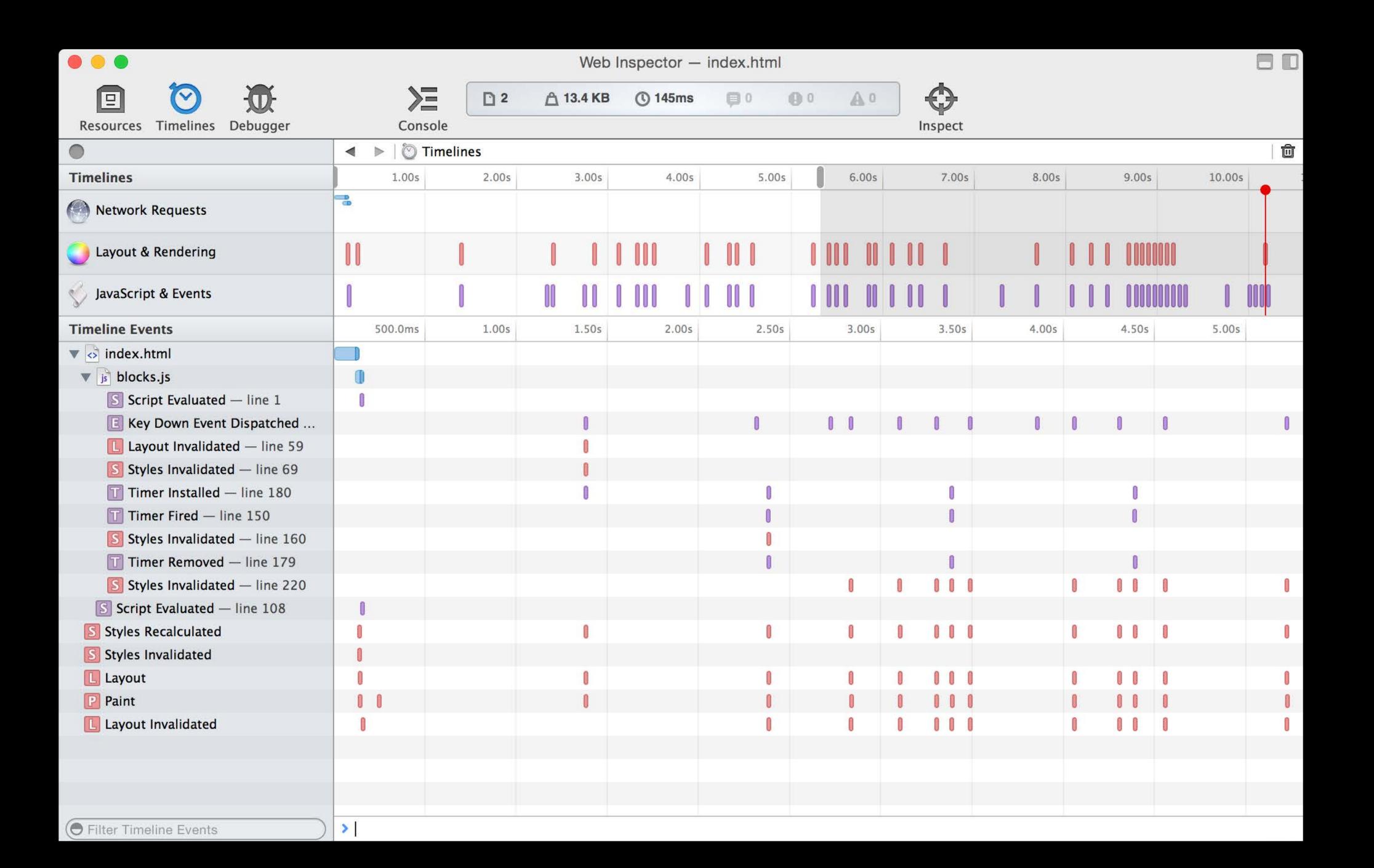


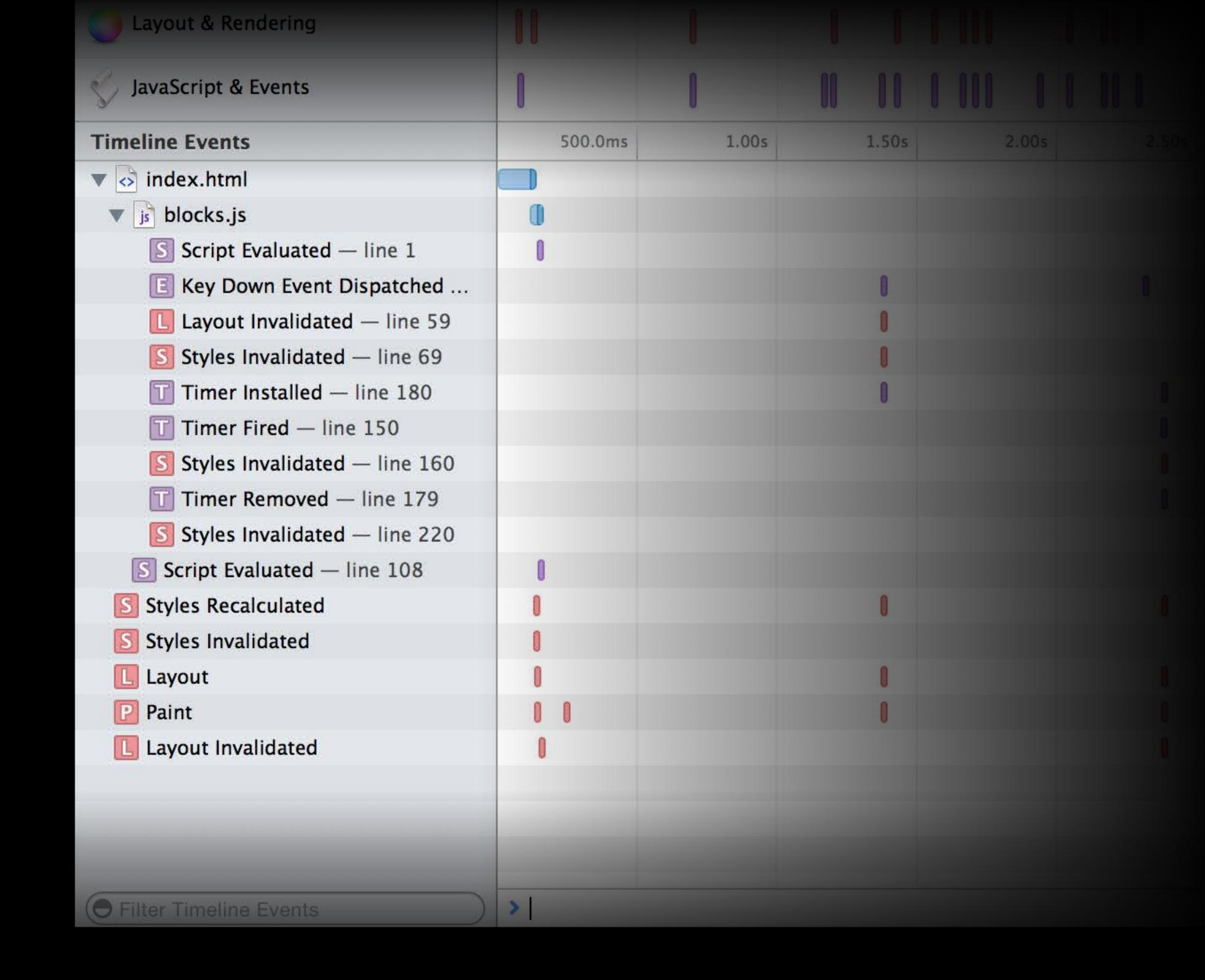


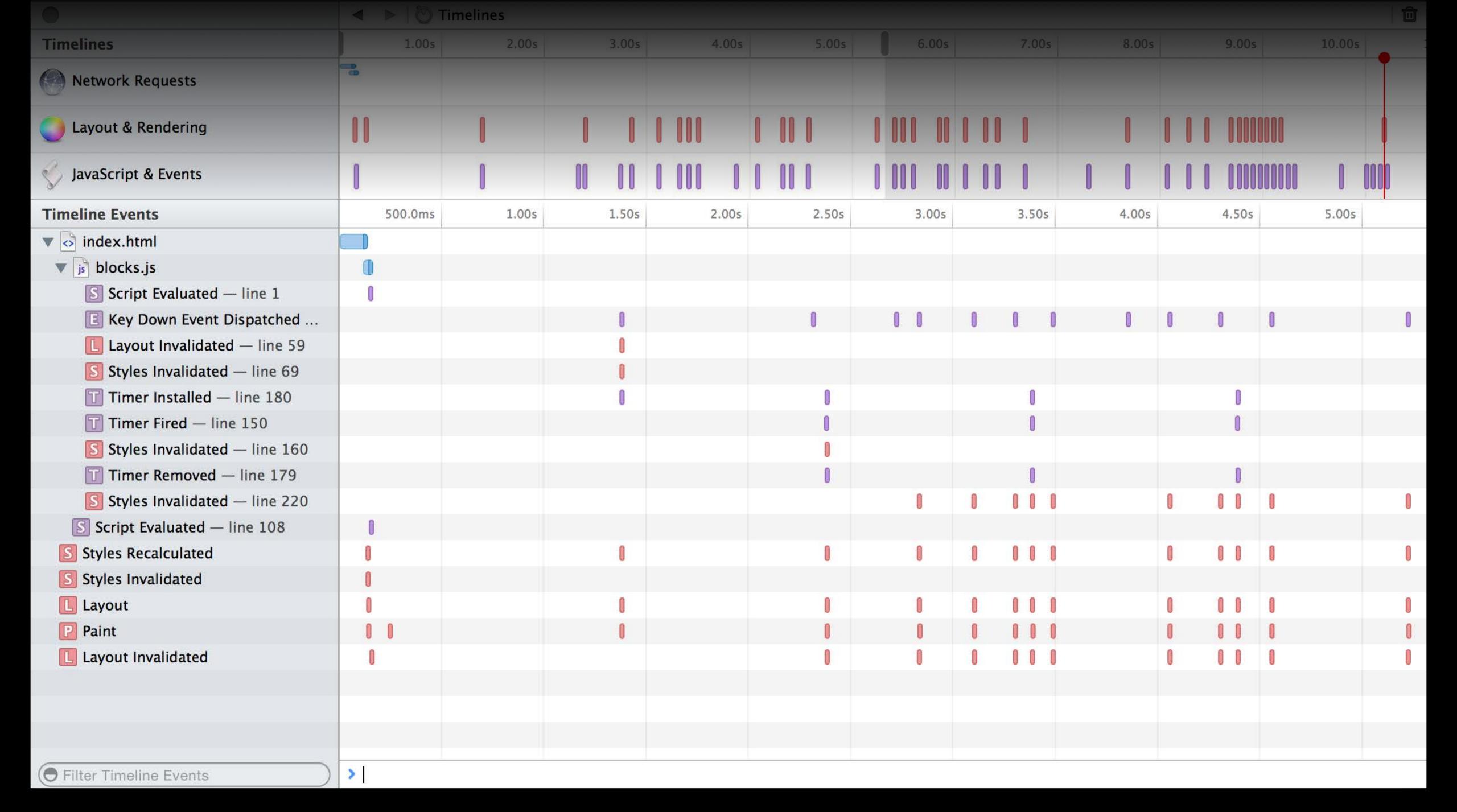


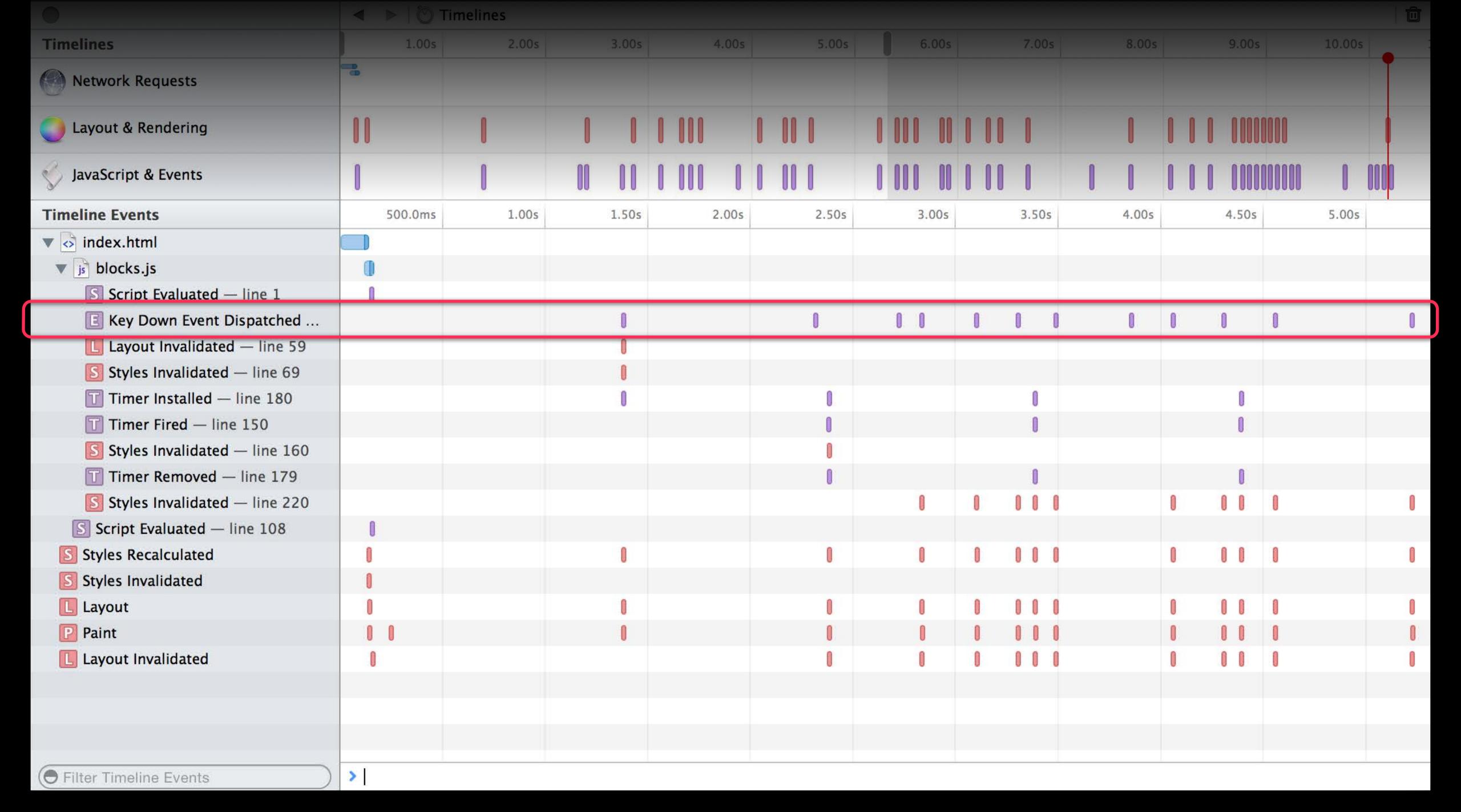












```
✓ Index.html ) js blocks.js

                                                  field[y] = [];
Timelines
                                                  for (var x=0; x<width; x++) {
                                      72
                                                       field[y][x] = 0;
                                      73
Network Requests
                                      74
                                      75
Layout & Rendering
                                      76 }
                                       77
                                          function splash() {
JavaScript & Events
                                      79
                                       80
                                          function registerEvents() {
Timeline Events
                                              addEvent(document, "keydown", onKeyDown);
                                       82
▼ 🐼 index.html
                                       83
                                       84
  ▼ js blocks.js
                                          function addEvent(el, event, handler) {
     Script Evaluated — line 1
                                              if (el.addEventListener)
                                       86
                                                  el.addEventListener(event, handler, false);
                                       87
      E Key Down Event Dispatched ...
                                              else if (el.attachEvent)
                                       88
      Layout Invalidated — line 59
                                                  el.attachEvent("on" + event, handler);
                                      89
                                      90 }
      Styles Invalidated — line 69
                                       91
      Timer Installed — line 180
                                          function onKeyDown(e) {
                                       92
                                              e = e || window.event;
                                       93
      Timer Fired — line 150
                                              var keyCode = e.which || e.keyCode;
                                       94
                                              switch (keyCode) {
      Styles Invalidated — line 160
                                       95
                                                  case 13: // enter
                                       96
     Timer Removed — line 179
                                                      dropPiece();
                                       97
                                                       break;
                                      98
      Styles Invalidated — line 220
                                                  case 32: // space
                                       99
    Script Evaluated — line 108
                                                       if (!running) {
                                     100
                                                           startGame();
                                     101
  Styles Recalculated
                                                           return;
                                     102
  Styles Invalidated
                                     103
                                                  case 38: // up
                                     104
  Layout
                                                       rotateActivePiece();
                                     105
  Paint
                                                       break;
                                     106
                                                  case 39: // left
                                     107
  Layout Invalidated
                                                       moveActivePiece(1, 0);
                                     108
                                     109
                                                      break;
                                                  case 37: // right
                                     110
                                                      moveActivePiece(-1, 0);
                                     111
                                     112
                                                       break;
                                                  case 40: // down
                                     113
( Filter Timeline Events
```

Web Inspector New features

Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details

Web Inspector New features

Mac App inspection

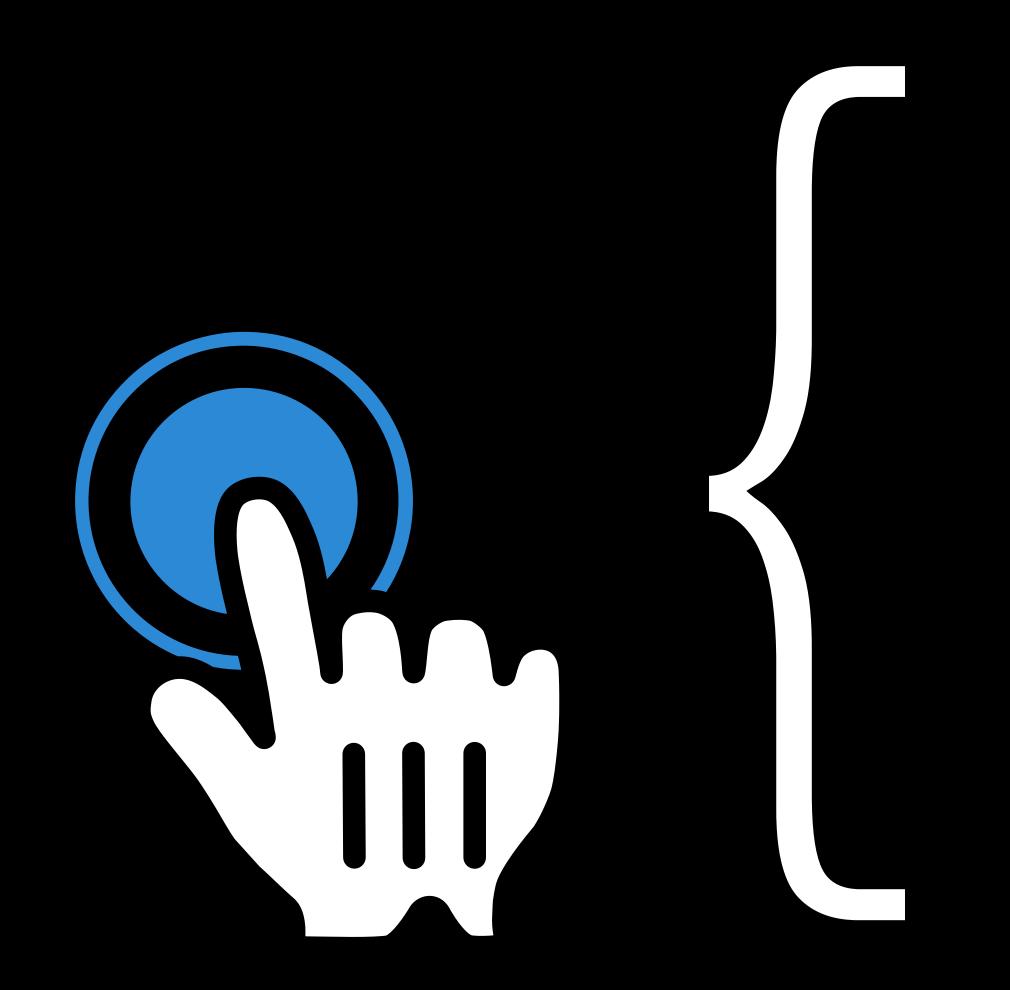
JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details





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

Demo

Source Code Timelines and Breakpoint Probes

Web Inspector New features

Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details

Web Inspector New features

Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details

```
ert Dialog Navigation Menu</h2>
  cample 1: Number Guessing Game</h1>
 class="quess">
lessing Game</h2>
put">...
out">...
rt1" role="alertdialog" tabindex="0" aria-hidden="false"
 "alert1_title" style="left: 187.5px; top: 160.875px;
 t1_title" class="title">Alert Box
 t1_message">You must enter a number!
 alert1_close" type="button" value="Close">
tcuts</h2>
nd Properties</h2>
</h2>
Code</h2>
s="codebox" style="display: none">...</div>
ource Code</h2>
ass="codebox" style="display: none">...</div>
ode</h2>
 ss="codebox" style="display: none">...</div>
t/javascript">...</script>
```

▼ Attributes Value Name id alert1 alertdialog role tabindex aria-hidden false aria-labeledby alert1_title left: 187.5px; top: 160.875px; dis style play: block; Properties Event Listeners ▼ Accessibility Role alertdialog Parent div:role(application) Children p#alert1_title

p#alert1_message

Focused Yes

Live Assertive

input#alert1_close:role(button)

```
lert Dialog Navigation Menu</h2>
Example 1: Number Guessing Game</h1>
" class="guess">
uessing Game</h2>
put">...
put">...
rt1" role="alertdialog" tabindex="0" aria-hidden="false"
"alert1_title" style="left: 187.5px; top: 160.875px;
ct1_title" class="title">Alert Box
t1_message">You must enter a number!
alert1_close" type="button" value="Close">
rtcuts</h2>
nd Properties</h2>
s</h2>
Code</h2>
ss="codebox" style="display: none">...</div>
ource Code</h2>
ass="codebox" style="display: none">...</div>
ode</h2>
ss="codebox" style="display: none">...</div>
xt/javascript">...</script>
```

	input
▼ Attributes	
Name	Value
d	alert1_close
ype	button
/alue	Close
Properties	
Event Liste	ners
▼ Accessibili	ty
Role	button (default)
Clickable	Yes
Focused	No

Web Inspector New features

Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details

Web Inspector New features

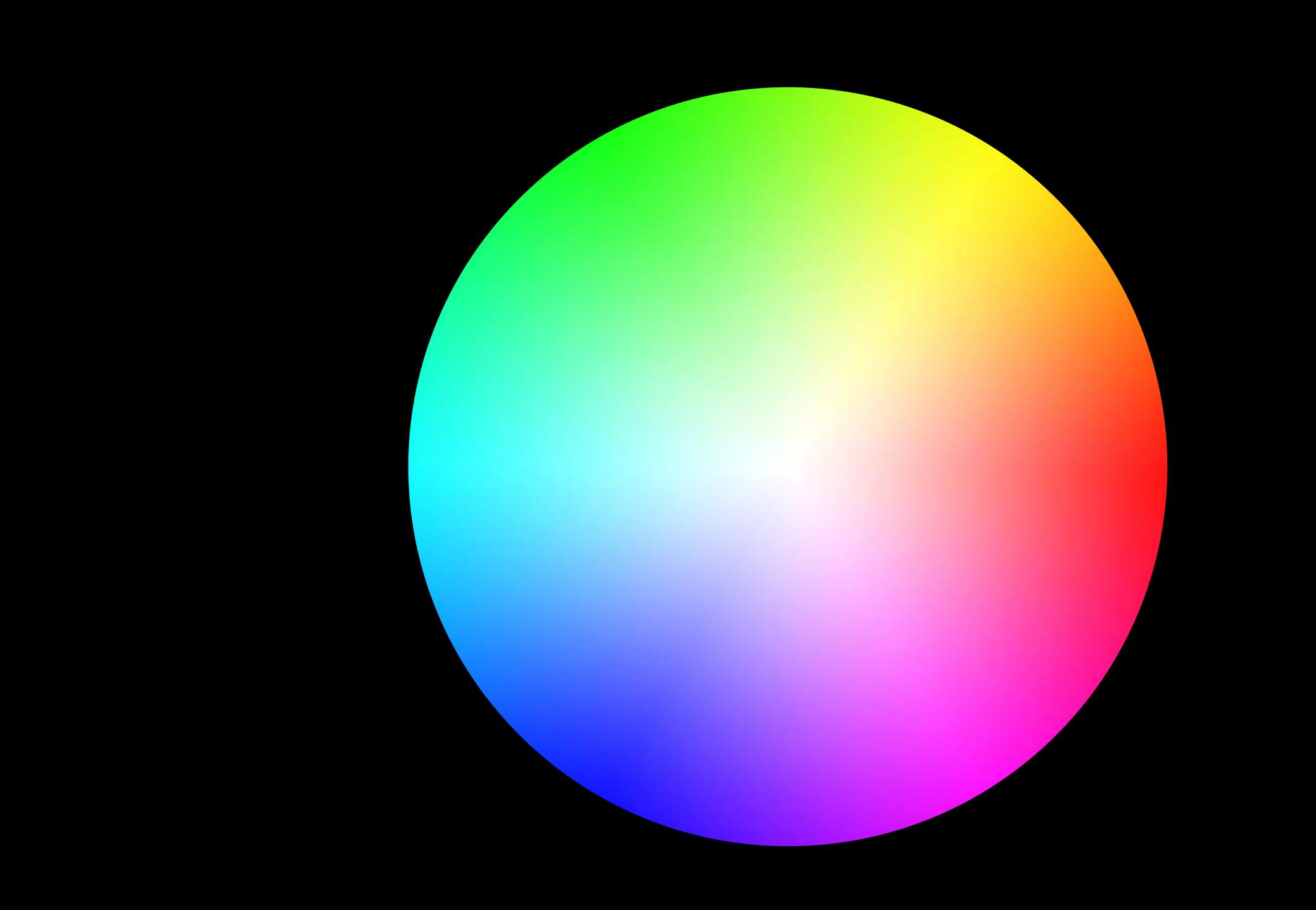
Mac App inspection

JavaScriptCore support

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Accessibility details



Demo

Web Inspector New features

Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details

Web Inspector

New features

Mac App inspection

JavaScriptCore support

Source Code Timelines

Breakpoint Probes

Accessibility details

Take advantage of new JavaScript language features

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

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

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 @apple.com

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

Apple Developer Forums http://devforums.apple.com

Related Sessions

Improving the Accessibility and Usability of Complex Web Applications	Marina	Friday 9:00AM
 Designing Responsive Web Experiences 	Marina	Friday 10:15AM

Labs

Safari and WebKit Lab

Media Lab B

Thursday 2:00PM

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