HTML5 JavaScript APIs

jsconf.eu 2009
2022 = two completely interoperable implementations
HTML5
HTML5

Web Forms
Audio/Video
Canvas

Offline
Drag & Drop
Editable

History API
Undo
X-Domain
Messaging
“HTML5”
“HTML5”

- Web Forms 2.0
- Audio & Video
- Canvas
- Offline

- Storage
- Geolocation
- Workers
“HTML5”

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Web Forms 2.0

Actual search for "web forms", wtf? http://tr.im/webforms_pic
"JavaScript is only good for image roll overs & form validation"
"JavaScript is only good for image roll overs & form validation"
"JavaScript is only good for image rollovers & form validation"
"JavaScript is only good for image roll overs & form validation awesome shit"

.hasFeature('WebForms', '2.0')
Give me a valid email address

<localhost>
Something's gone wrong...

Stop executing scripts on this page

OK
var f = document.querySelector('form');
f.onsubmit = function () {
    if (this.checkValidity()) {
        alert("It's all okay");
    } else {
        alert("Something's gone wrong...");
        return false;
    }
};
Less JavaScript on donkey work == more JavaScript on awesome work.
Native Media Elements
<video src="dizzy.ogv" />
WATCH
WHATEVER
WHENEVER.

With Sony’s Betamax SL-8600 videorecorder, you can see any TV show you want to see anytime you want to see it. Because Betamax, which plugs into any TV set and is easy to operate, can videotape a show up to three-hours long (with the L-750 videocassette) while you’re doing something else—even while you’re out of the house, by setting the electronic timer.

It can also videotape something off one channel while you’re watching another channel.

And remember, Sony has more experience in videorecorders than anyone (over 20 years!). In fact, we’ve sold more videorecorders to broadcasters and industry than any other consumer manufacturer. We even make our own tape.

For years you’ve watched TV shows at the times you’ve had to. Now you can watch them at the times you want to.
<video>
  <source src="dizzy.ogg" />
  <source src="dizzy.mp4" />
</video>
<video>
  <source src="dizzy.ogv" />
  <source src="dizzy.mp4" />
</video>
<video>
<source src="dizzy.ogv" />
<source src="dizzy.mp4" />
<!-- QuickTime support -->
<object><param></object>
</video>
<video>
<source src="dizzy.ogv" />
<source src="dizzy.mp4" />
<!-- QuickTime support -->
<object><param></object>
<!-- down to flash -->
<object><param></object>
</video>
<video>
  <source src="dizzy.ogv" />
  <source src="dizzy.mp4" />
</video>
if (video.paused) {
    if (video.ended) {
        video.currentTime = 0;
    }
    video.play();
} else {
    video.pause();
}
if (video.paused) {
    if (video.ended) {
        video.currentTime = 0;
    }
    video.play();
} else {
    video.pause();
}
if (video.paused) {
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        video.currentTime = 0;
    }
    video.play();
} else {
    video.pause();
}
if (video.paused) {
  if (video.ended) {
    video.currentTime = 0;
  }
  video.play();
} else {
  video.pause();
}
addEvent(
    video,
    'timeupdate',
    function () {
        position.innerHTML =
            asTime(this.currentTime);
    };
);
addEvent(
    video,
    'timeupdate',
    function () {
        position.innerHTML = asTime(this.currentTime);
    }
);
addEvent(
  video,
  'timeupdate',
  function () {
    position.innerHTML =
    ➔ asTime(this.currentTime);
  }
);
}
• `play()`, `pause()`
• `paused`, `ended`, `currentTime`
• `canplay`, `timeupdate`, `ended`
• and a bunch more.
• Bugs tend to be rather quiet...shhh...
• Firefox needs the right content-type
• Safari will plough ahead
Accessibility?
http://open.bbc.co.uk/rad/demos/html5/rdtv/episode2/
<!DOCTYPE html>
<html>
<head>
    <title>Canvas</title>
</head>
<body>
    <canvas></canvas>
</body>
</html>
var ctx = canvas.getContext('2d');
var ctx = canvas.getContext('2d');

// Create radial gradient
var grad = ctx.createRadialGradient(0,0,0,0,0,600);
var ctx = canvas.getContext('2d');

// Create radial gradient
var grad = ctx.createRadialGradient(0,0,0,0,0,600);
grad.addColorStop(0, '#E4E4E4');
grad.addColorStop(1, '#000');
```javascript
var ctx = canvas.getContext('2d');

// Create radial gradient
var grad = ctx.createRadialGradient(0, 0, 0, 0, 0, 600);
grad.addColorStop(0, '#E4E4E4');
grad.addColorStop(1, '#000');

// assign gradients to fill
ctx.fillStyle = grad;
```
var ctx = canvas.getContext('2d');

// Create radial gradient
var grad = ctx.createRadialGradient(0,0,0,0,0,600);
grad.addColorStop(0, '#E4E4E4');
grad.addColorStop(1, '#000');

// assign gradients to fill
ctx.fillStyle = grad;

// draw 600x600 fill
ctx.fillRect(0,0,600,600);
ctx.toDataURL("image/png");
Canvas
+
drawImage
+
Video
=

Click to play:

Choose a pattern:

Video:

Image:

Image:

Canvas:

Your text:

Your drawing:
patterns: video, img, canvas

computeHandlerPositions();
canvas.rotate();
canvas.translate();
canvas.scale();
canvas.drawImage(pattern);

canvas.drawImage(video);

canvas.getImageData();
frame = ctx.getImageData(0, 0, w, h);
i = 0; // or via loop
r = frame.data[i + 0];
g = frame.data[i + 1];
b = frame.data[i + 2];
ctx.translate(canvas.width/2, canvas.height/2);
ctx.scale(-1, 1);
ctx.translate(-canvas.width/2, -canvas.height/2);

ctx.drawImage(
    video, 0, 0,
    video.width, video.height,
    0, 0,
    canvas.width, canvas.height);
Don't use for evil
Offline Applications
You are not connected to the Internet.

Safari can't open the page "http://html5demos.com/" because your computer isn't connected to the Internet.

Network Diagnostics can help you solve network connection problems.

Network Diagnostics...
Offline Apps

- Application cache
- Events: offline, online
- navigator.onLine property
Enable

<!-- my page -->
my.manifest

CACHE MANIFEST

images/shade.jpg
images/bin.jpg

#version 13
Cache

• **First line:** CACHE MANIFEST
• **Requires** text/cache-manifest
• **Recommend using versioning**
• **window.applicationCache**
• **Add it last!**
The process
Browser: request

Server: serve all

Browser: I have a manifest, cache assets

Server: serve manifest assets

Browser: applicationCache updated

Browser: reload

Browser: only request manifest file

Server: 304 Not Modified

Browser: serve locally
Storage
(giant cookies)
key/val SQLite
key/value

window based

sessionStorage

localStorage

setItem(key, value);

getItem(key);
key/value

- window based: sessionStorage
- domain based: localStorage

```javascript
.setItem(key, value);
.getItem(key);
```

sessionStorage: jamin' a session out
localStorage: but this'll stay longer

Key | Value
--- | ---
value | jamin' a session out
timestamp | 1257523159730
User agents must implement the SQL dialect supported by SQLite 3.6.19

Another one that fails super silently :( 
db = openDatabase("demo", "1.0", "sample", 200000);

db.transaction(function (tx) {
    tx.executeSql('SELECT * FROM tweets
    WHERE mention = ?', [mention], function (tx, results) {
        // do something with results
    });
});
db = openDatabase("demo", "1.0", "sample", 200000);

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db = openDatabase("demo", "1.0", "sample", 200000);

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        // do something with results
    });
});
Web Database

We're using the Web Database API to store my tweets, so there's no Twitter API hit on load.

In addition, I'm using the since_id when we make new requests, so I shouldn't be doubling up on tweets.
Geolocation
Geolocation
“http://html5demos.com” Would Like To Use Your Current Location

Don’t Allow  OK
Not always accurate!
navigator.geolocation.getCurrentPosition(success, err);
undefined latitude=51.500152 longitude=-0.126236

- CONTENT_NODE
- DOM_OBJECT
- EAGER_CLASSINFO
- MAIN_THREAD_ONLY
- PLUGIN_OBJECT
- RESERVED
- SINGLETON
- THREADSAFE
- accuracy
- altitude
- altitudeAccuracy
- classDescription
- classID
- contractID
- flags
- heading
- ImplementationLanguage
- latitude
- longitude
- speed
Web Workers
• "Threads"
• Native or via Gears (or setTimeout hack?)
• Sandboxed
• Debugging?
Non Worker (for reference)

Canvas is running whilst an prime number finder runs - this will cause your browser to hang

Prime found: 2363741

Start worker

Slow Script

Safari is no longer responding because of a script on the webpage "HTML5 Demo: worker reference point" (http://html5demos.com/non-worker). Do you want to stop running the script, or let it continue?

Stop  Continue

HTML5 demo
Worker

Canvas is running whilst an prime number finder runs in a worker

Prime found: 0

start worker
• importScripts
• postMessage
• onmessage
• onconnect
var w = new Worker('worker.js');

w.onmessage = function (event) {
    alert("msg: " + event.data);
};

w.postMessage('run');
importScripts('xhr.js', 'db.js');

onmessage = function (event) {
    if (event.data == 'run') {
        run();
    }
};

function run() {
    var data = doCrazyNumberCrunch();
    postMessage(data);
}
importScripts('xhr.js', 'db.js');

onmessage = function (event) {
    if (event.data == 'run') {
        run();
    }
};

function run() {
    var data = doCrazyNumberCrunch();
    postMessage(data);
}
importScripts('xhr.js', 'db.js');

onmessage = function (event) {
  if (event.data == 'run') {
    run();
  }
};

function run() {
  var data = doCrazyNumberCrunch();
  postMessage(data);
}
And a lot more...
Attributes: data-*, itemProp, sandbox (on iframes)

<progress>  Microdata API, datagrid, XHR2 & upload progress
<meter>
<datalist>
<ruby>

Drag & Drop, History manager

querySelector

querySelector

ARIA overlap
Remy Sharp
@rem

(another)

JavaScript Conference: full-frontal.org

http://html5demos.com

Pro tip: cats can't code for crap

Links: http://tr.im/rs_jsconfeu