

<HTML5>

NEW AND IMPROVED

Adapted from

- More Semantic HTML tags

- Media Tags

- Geolocation

- Canvas

- Input Types

- Form Validation

- Local Storage

- WebSQL Storage

- Offline Applications

- Draggable

- Cross-Domain Messaging

- Web Sockets

- Web Workers

- History API

- HTML 5 Support



HTML5 History

- Specification of HTML published by W3C
- W3C HTML5 Spec => 900+ pages
- Work started on HTML5 in late 2003
- First Working Draft published January 2008
- Expected Candidate Recommendation - 2012
- W3C Recommendation - 2022 or later *

* Requires 2 100% complete and fully interoperable implementations

HTML5 Compatibility (out of 555)

<http://www.HTML5test.com>

Desktop

	Chrome	Opera	Firefox	Edge	Safari
Upcoming	67 → 528		60 → 497	18 → 496	11.2 → 477
Current	66 → 528	45 → 518	59 → 491	17 → 492	11.1 → 471
				Internet Explorer	
					11 → 312

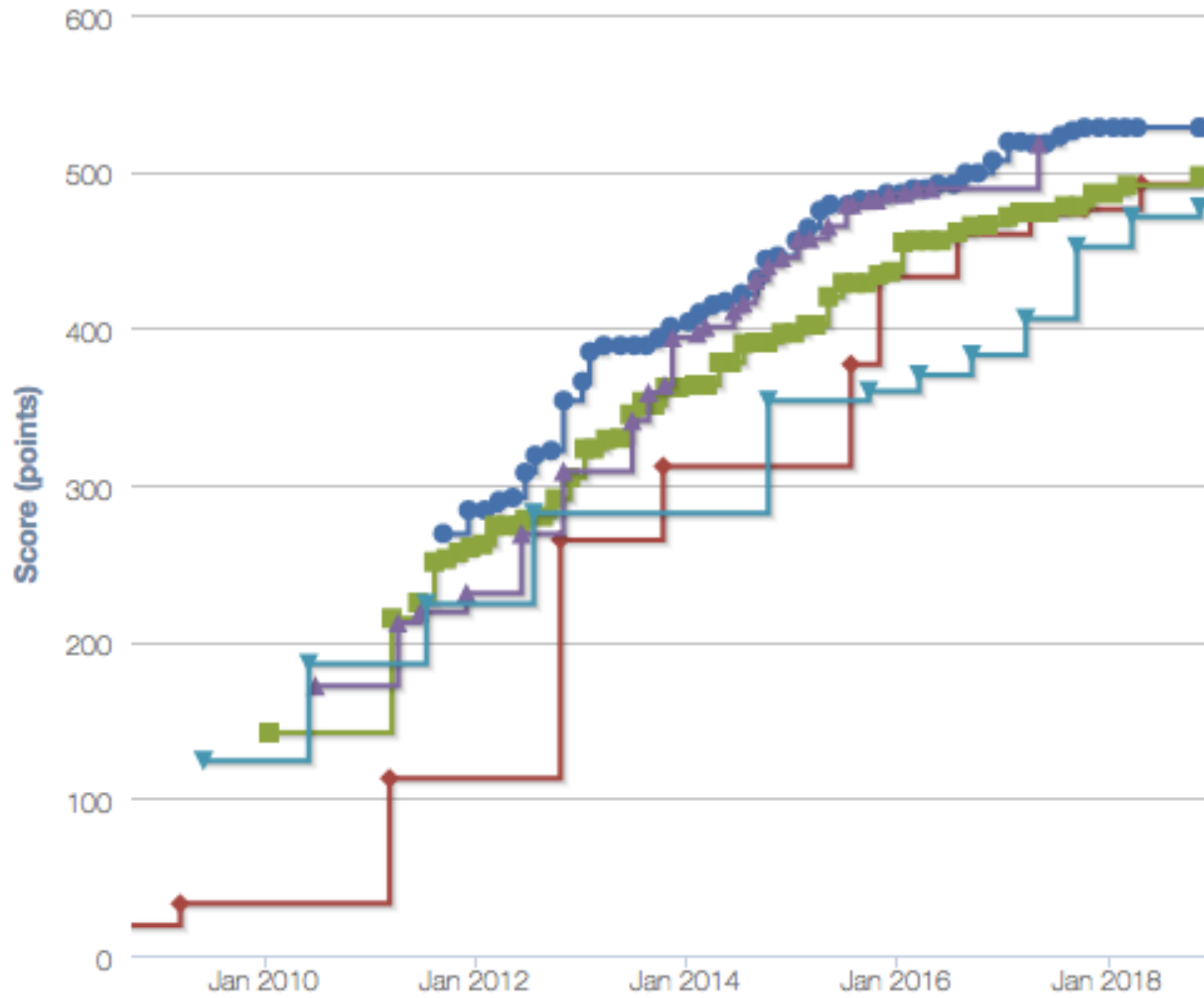
Tablet

	Chrome	Opera Mobile	Edge	iOS	Firefox Mobile
Upcoming			18 → 496		
Current		37 → 481	17 → 492	10.3 → 415	
Older	52 → 486	12.10 → 289	16 → 476	10.2 → 391	48 → 466

Smartphones

	Chrome	Samsung Internet	Opera Mobile	Edge	iOS	Firefox Mobile
Upcoming						

HTML5 Compatibility



Less Header Code

re HTML5:

```
DOCTYPE HTML PUBLIC "-//W3C//Dtd HTML 4.01 Transitional//EN" "http://www.w3.org/tr/html4/loose.dtd">
```

```
html>
```

```
<head>
```

```
  <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
```

```
  <title>Awesome Stuff</title>
```

```
</head>
```

With HTML5:

```
DOCTYPE HTML>
```

```
html>
```

```
<head>
```

```
  <meta charset="utf-8">
```

```
  <title>Awesome Stuff</title>
```

No Need for Type Attribute

Pre HTML5:

```
<script type="text/javascript" src="script.js"> </script>  
<link type="text/css" href="style.css"></link>
```

With HTML5:

```
<script src="script.js"> </script>  
<link href="style.css"></link>
```

```
<div id="header">
```

```
<div id="nav">
```

```
<div id="sidebar">
```

```
<div id="article">
```

More Semantic HTML tags

<header>

<nav>

<aside>

<section>

<article>

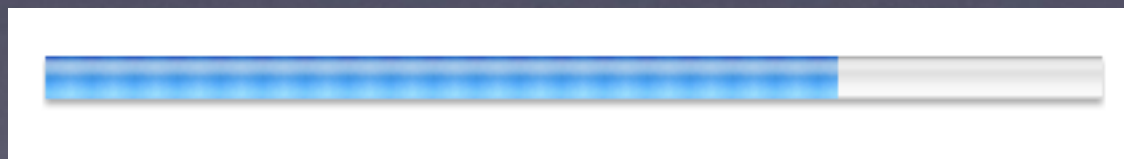
More Semantic HTML tags

Output

```
<output name="result"></output>
```

Progress

```
<progress id="p" max=100><span>0</span>%</progress>
```



More Semantic HTML tags

Meter

Storage space usage:

```
<meter value=6 max=8>6 blocks used (out of 8 total)</meter>
```

Power turnout:

```
<meter value=0.75></meter>
```

Tickets sold:

```
<meter min="0" max="100" value="75"></meter>
```

- Meter: empty
- Meter: full
- Meter: "a bit"
- Preferred usage
- Too much traffic
- Optimum value



More Semantic HTML tags

Details and Summary

etails>

<summary>

American League Central Division

</summary>

Detroit Tigers

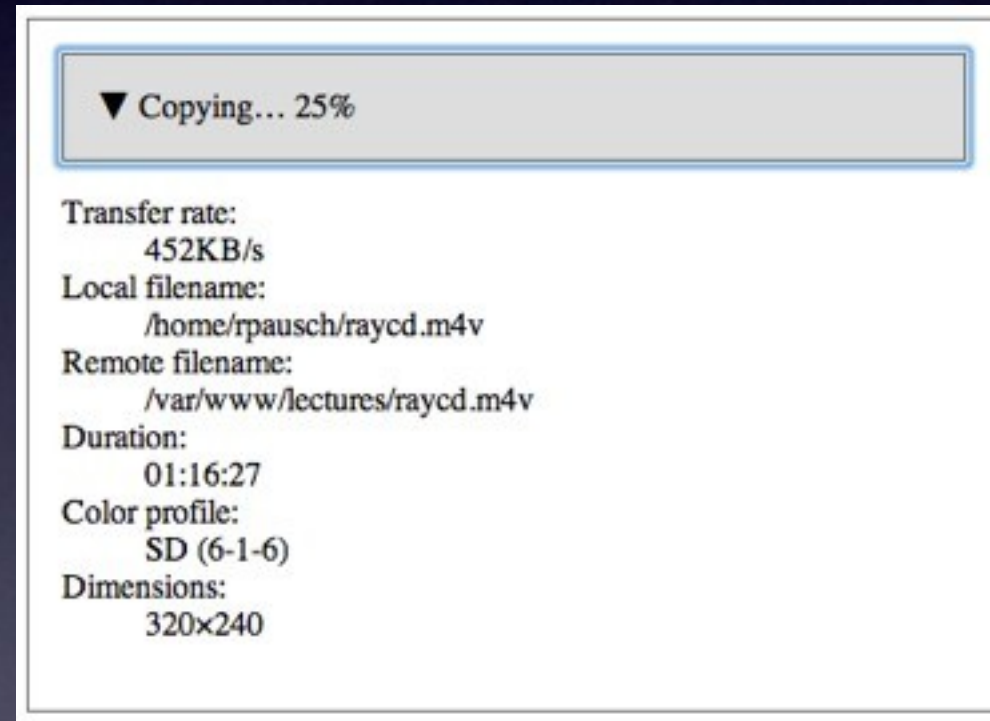
Minnesota Twins

Chicago White Sox

Cleveland Indians

Kansas City Royals

etails>



Use to create an expanding and contracting element that you can use to hide

More Semantic HTML tags

Address

```
address>
```

```
Written by:<br/>
```

```
<a href="/people/show/23">Timothy Fisher</a>, <br/>
```

```
Address: 25296 Hunter Lane, Flat Rock, MI 48134 <br/>
```

```
Phone: 555-1212
```

```
/address>
```

Address applies to the nearest Article or Body tag.

Prior to HTML5 the Address element applied to the document/body as a whole

More Semantic HTML tags

Data Attributes

```
div class="car" data-brand="ford" data-model="mustang">  
<button class="fire">  
div>
```

using DOM's `getAttribute()` property

```
brand=mydiv.getAttribute("data-brand") //returns "ford"  
div.setAttribute("data-brand", "mazda") //changes "data-brand" to "mazda"  
div.removeAttribute("data-brand") //removes "data-brand" attribute entirely
```

using JavaScript's `dataset` property

```
brand=mydiv.dataset.brand //returns "ford"  
div.dataset.brand='mazda' //changes "data-brand" to "mazda"  
div.dataset.brand=null //removes "data-brand" attribute
```

More Semantic HTML tags

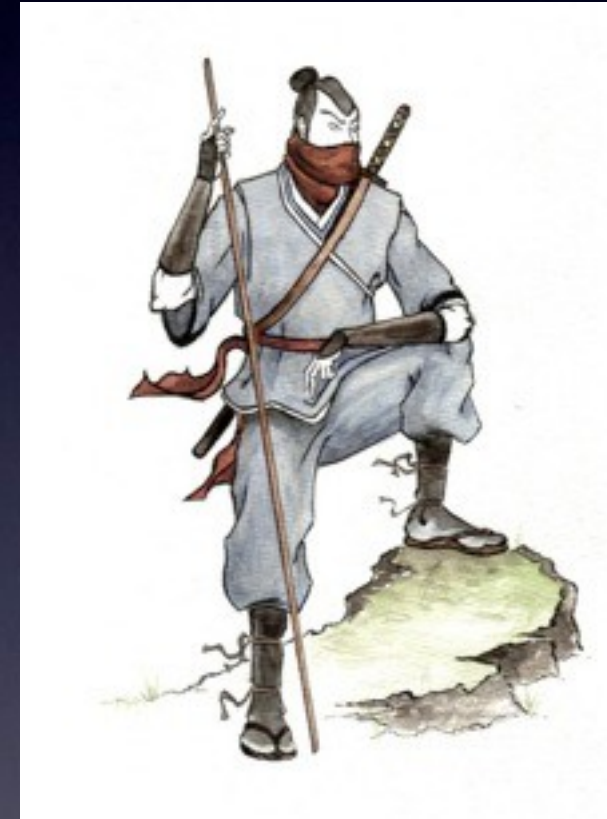
Section, hgroup, Article

```
<article>  
<hgroup>  
  <h1>Mobile Phones</h1>  
  <h2>Different Smart Phones</h2>  
</hgroup>  
<p>Some of the more popular mobile smart phones</p>  
<section>  
  <h1>Apple iPhone</h1>  
  <p>A popular smart phone from Apple.</p>  
</section>  
<section>  
  <h1>Android-based Phones</h1>  
  <p>A series of smart phones that use the Google Android operating system.</p>  
</section>  
</article>
```

More Semantic HTML tags

Figure and Figure Caption

```
ure>  
img src="ninja_guy.jpg" alt="A Standing Ninja Guy.">  
figcaption>Cool Ninja Guy</figcaption>  
ure>
```



Cool Ninja Guy

More Semantic HTML tags

Menu and Command

```
menu label="Hero List">  
<command type="radio" radiogroup="herolist" label="Spiderman">  
<command type="radio" radiogroup="herolist" label="Superman">  
<command type="radio" radiogroup="herolist" label="Batman">  
menu>
```

a simple radio button group

More Semantic HTML tags

Menu (continued)

```
menu type="toolbar">
```

```
li>
```

```
<menu label="File">
```

```
<button type="button" onclick="file_new()">New...</button>
```

```
<button type="button" onclick="file_open()">Open...</button>
```

```
<button type="button" onclick="file_save()">Save...</button>
```

```
<button type="button" onclick="file_saveas()">Save As...</button>
```

```
</menu>
```

```
/li>
```

```
li>
```

```
<menu label="Edit">
```

```
<button type="button" onclick="edit_copy()">Copy...</button>
```

```
<button type="button" onclick="edit_cut()">Cut...</button>
```

```
<button type="button" onclick="edit_paste()">Paste...</button>
```

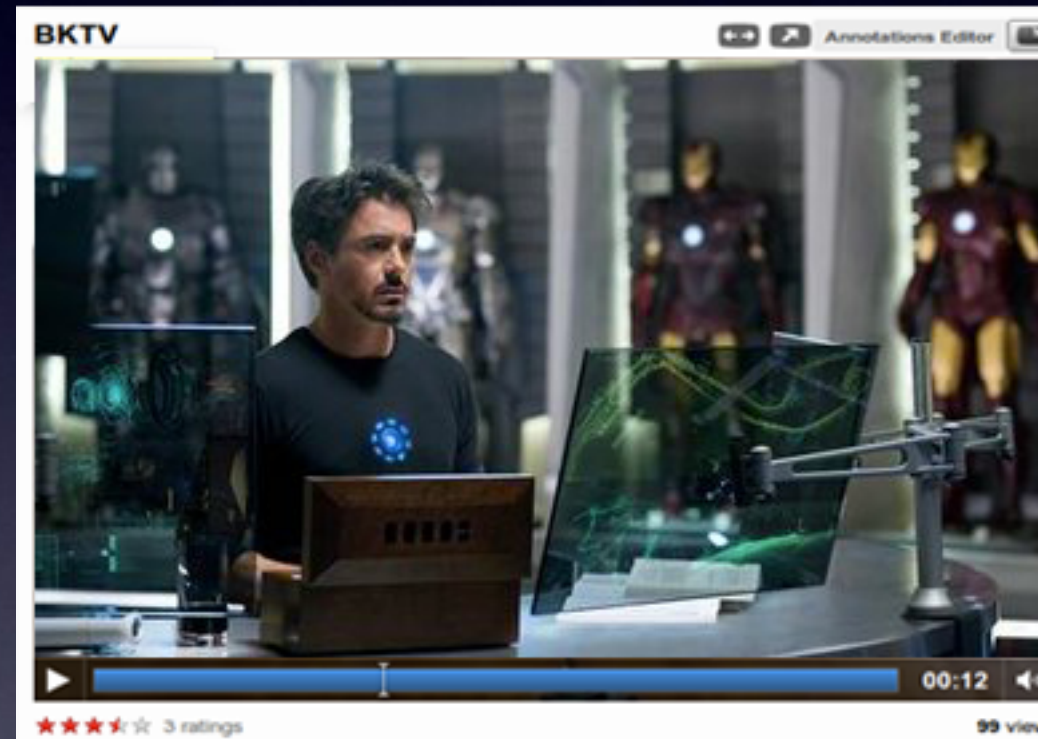
```
</menu>
```

Media Tags

```
<video src="ironman.ogg" />
```

Automatically show native controls

```
<video src="ironman.ogg" controls />
```



Media Tags

```
video controls/>
```

```
<source src="ironman.mp4" />
```

```
<source src="ironman.ogg" />
```

```
video>
```



ironman.mp4



ironman.ogg

specify multiple source elements to support more browsers

(i.e. mp4 will work in Safari, ogg will work in Firefox)

Media Tags

```
<audio src="teenage_dream.mp3"></audio>
```

```
<audio controls>
```

```
<source src="teenage_dream.mp3"/>
```

```
<source src="teenage_dream.ogg"/>
```

```
</audio>
```



Provides a download link for non-supporting browsers:

```
<audio src="teenage_dream.ogg" autoplay controls loop>
```

```
<a href="teenage_dream.ogg">download</a>
```

```
</audio>
```

Native Geolocation

Build location-aware apps without access to native mobile ap

```
navigator.geolocation.getCurrentPosition(  
  function(position) {  
    // display position  
  }  
);
```

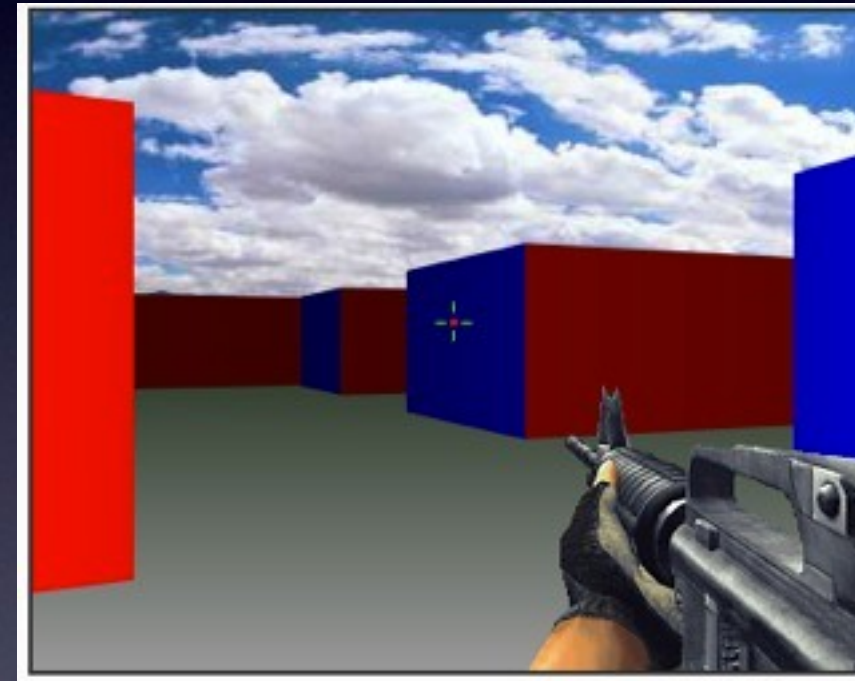


Canvas

A complete drawing and animation API

```
canvas id="square">  
  fallback content  
canvas>
```

```
script>  
  // create basic filled square  
  canvas = canvas.getElementById('square');  
  context = canvas.getContext('2d');  
  context.fillStyle = "#000000";  
  context.fillRect(0, 0, 100, 100);  
script>
```



input types

`input type="email" />`

tel	datetime
search	date
email	range
url	color

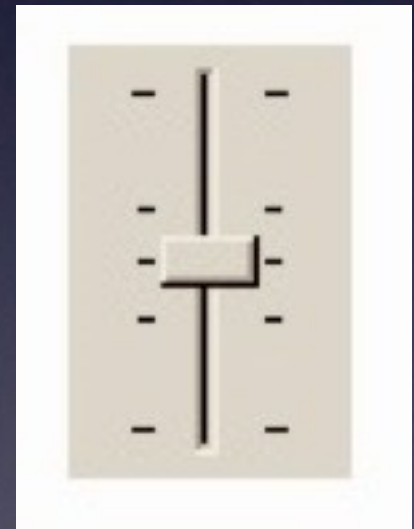


Unsupported browsers default to text type

Input types

Input Type Range + Datalist

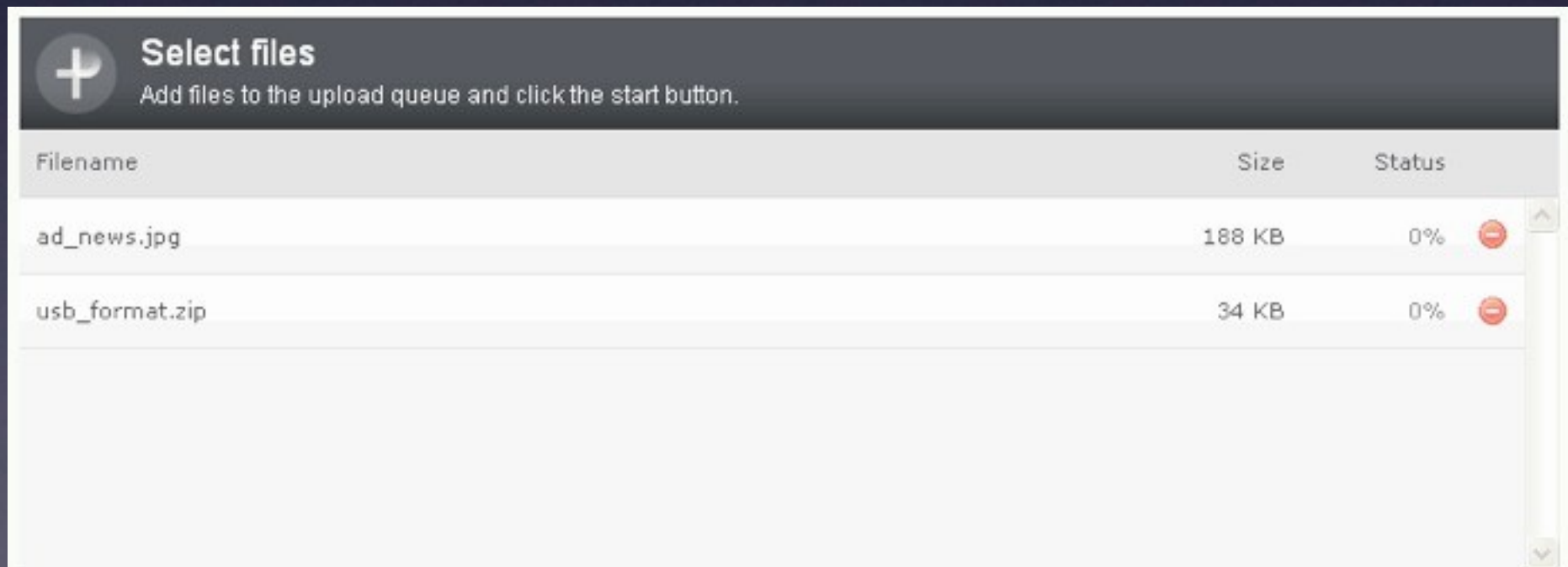
```
<input type="range" min="-100" max="100" value="0"  
      step="10" name="power" list="powers">  
<datalist id="powers">  
  <option value="0">  
  <option value="-30">  
  <option value="30">  
  <option value="+50">  
</datalist>
```



input types

File Upload Multiple

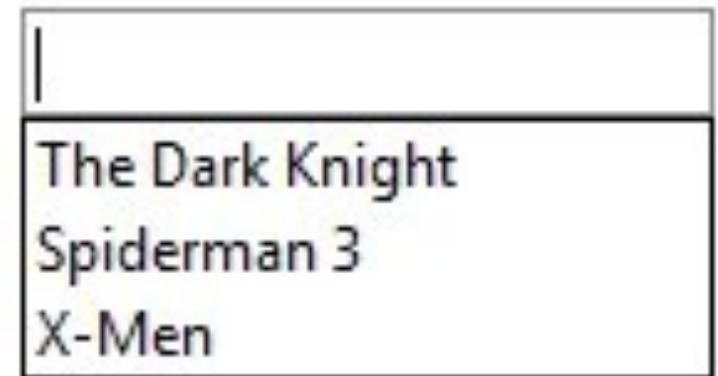
`<input type=file multiple>`



Input types

datalist

```
<input list="movies" />  
<datalist id="movies">  
  <option>The Dark Knight</option>  
  <option>Spiderman 3</option>  
  <option>X-Men</option>  
</datalist>
```



Used to provide Auto Complete feature

Form Validation

```
put name="custname" required>
```

```
cript>
```

```
form.checkValidity();
```

```
cript>
```

Username
blogfreakz

Password

Password Confirmation

Speciality
☒ jQuery ☒ JavaScript ☐ Rails ☒ PHP ☒ Wordpress ☒ Other

About you
CakePHP lover jQuery fans

(Try to) Subm

Form Validation

Custom Validation

```
<label>Gender: </label>
<input name="gender" type="text" oninput="check(this)">

<script>
function check(input) {
  if (input.value != "male" && input.value != "female")
    { input.setCustomValidity("'" + input.value + "' is not a
      gender.');"
    }
  else {
    // input is good - reset error message
    input.setCustomValidity("");
  }
}
```

Local / Session Storage

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

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



Save key/value pairs to a client-side data store implemented by browser

WebSQL Storage

Use of APIs to manipulate client-side databases using SQL

Open/create a database

```
var db = openDatabase(db_name, version, db_desc, est_size);
```

Create a table and insert some data

```
transaction(function (tx) {  
  tx.executeSql('CREATE TABLE foo (id unique, text)');  
  tx.executeSql('INSERT INTO foo (id, text) VALUES (1, "synergies")');
```

Select data and display it

```
tx.executeSql('SELECT * FROM foo', [], function (tx, results)  
{ var len = results.rows.length, i;  
  for (i = 0; i < len; i++)  
    { alert(results.rows.item(i).text);
```



Offline Applications

Offline Applications using manifest

`<html manifest="cache.manifest">`

Provide a cache.manifest file:

```
CACHE MANIFEST
clock.html
clock.css
clock.js
```

uses **MIME type**:
text/cache-manifest



Run a web application in offline mode, disconnected from Internet

Online Applications

Detect Online or Offline

```
window.addEventListener("online", function()  
    { do_something();  
}, true);
```

```
window.addEventListener("offline", function()  
    { do_something();  
}, true);
```



Draggable

```
<div draggable="true"></div>
```

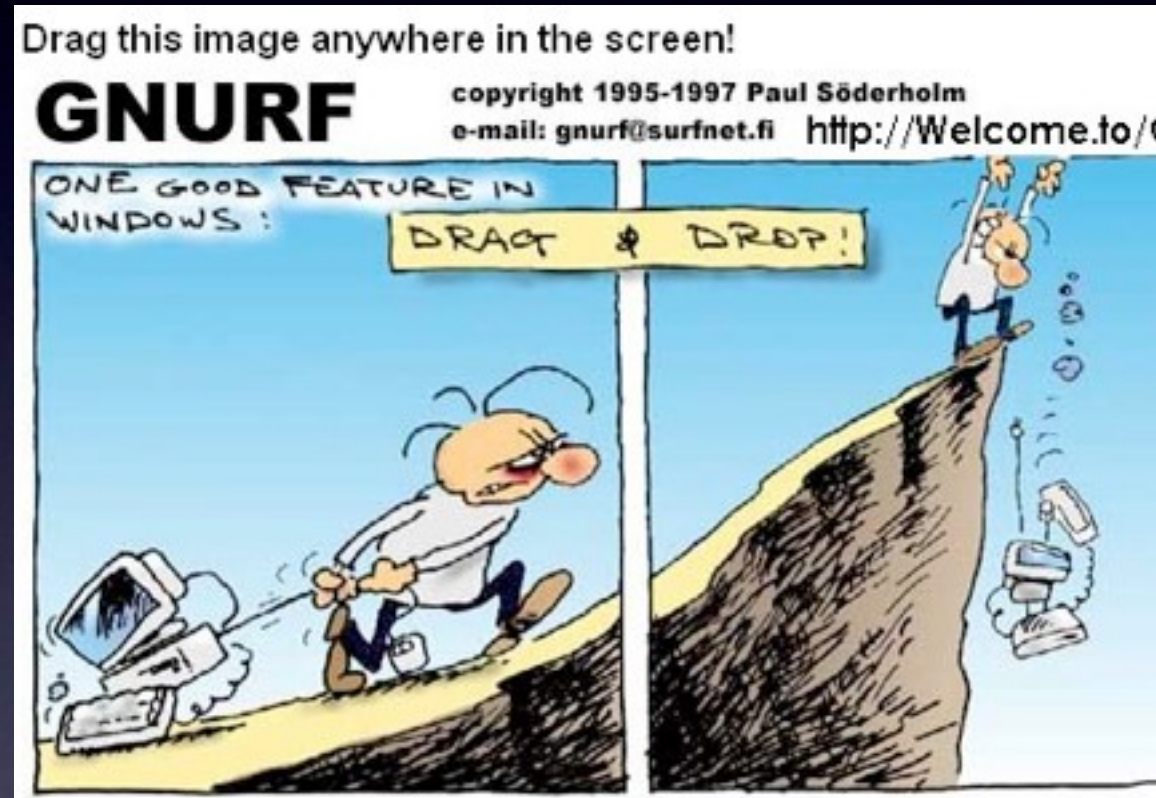
Set data to access at target

```
Event(div, "dragstart", function(e)  
[ e.dataTransfer.setData('foo',  
bar');  
ue);
```

Access data from dragged object

```
Event(div, 'dragend', function(e)  
[ e.dataTransfer.getData('foo');  
ue);
```

HTML5 drag and drop should work across frames, and **across browser windows.**



Cross-Domain Messaging



Sender

```
o = document.getElementsByTagName('iframe')[0];  
o.contentWindow.postMessage('Hello world', 'http://b.example.org/');
```

Recipient

```
addEventListener(window, "message", function(e)  
{  
    document.getElementById("rcvdr_message").innerHTML += e.origin + " said: " +  
    e.data + "  
    }  
});
```

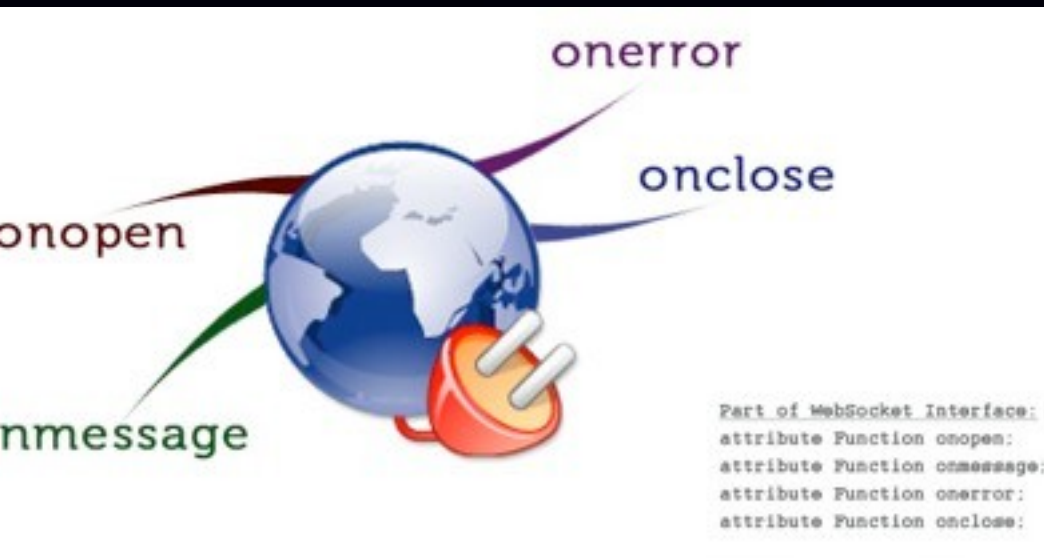
Editable Content



Turn any element into an editable area

```
ipt>  
document.getElementById('notepad').contentEditable = true;  
ript>
```

Web Sockets



- Opens a persistent connection to the server
- Can be used for server to browser push
- Restricted communication to origin server
- Eliminates need to poll for data

```
var ws = new WebSocket("ws://friendfeed.com/websocket");
ws.onopen = function() {
    ws.send("This is a message from the browser to the server");
};
ws.onmessage = function(event) {
    alert("The server sent a message: " + event.data);
};
```

WEB WORKERS

- Provide “threads” for JavaScript execution
- Don’t have access to DOM or page.
- Have to communicate through postMessage API



Web Workers

In the Browser

// Create a Web Worker

```
var worker = new Worker("worker.js");
```

// Post a message to the Web Worker

```
worker.postMessage(0);
```

// Triggered by postMessage in the Web Worker

```
worker.onmessage = function(evt) {  
    // evt.data is the values from the Web Worker  
    alert(evt.data);  
};
```

// Catch Web Worker error

```
worker.onerror = function(evt)  
{ alert(evt.data);
```



Web Workers

In the Web Worker

```
// Triggered by postMessage in the page  
onmessage = function(evt) {  
  // evt.data will be 0 here  
  for (var i=evt.data, k=1000001; i<k; i++) {  
    // Continually sends data back  
    postMessage(i);  
  };  
};
```



History API

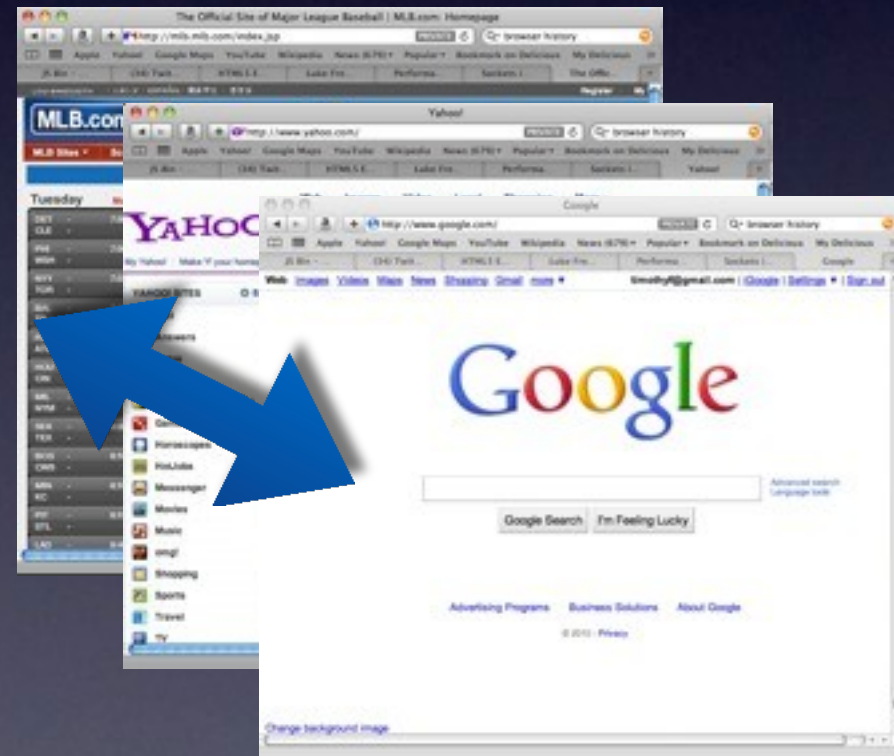
JavaScript API for moving through browser history

```
window.history.back();  
window.history.forward();
```

```
window.history.go(2);
```

```
window.history.length;
```

```
window.history.pushState(data, title, url);  
window.history.replaceState(data, title, url);
```



HTML5 Compatibility

L5Test.com scores browsers according to the following criteria:

- Parsing Rules
- Canvas
- Video
- Audio
- Local Devices
- Elements
- Forms
- HTML5 APIs
- Microdata
- WebApplications
- Geo Location
- WebGL
- Communication
- Files
- Storage
- Web Workers

Progressive Enhancement

- Use HTML5 when available

- Fallback to a different mechanism when not available

- Supported by many libraries including jQuery.

HTML5 video is not supported, flash video will load

```
video controls width="500">
```

```
<source src="video.ogv" />
```

```
<source src="video.mp4" />
```

```
<embed src="http://blip.tv/play/gcMV" type="application/x-shockwave-flash"  
width="1024" height="798" allowscriptaccess="always"
```

DON'T FORGET CSS3

- Rounded corners
- Box shadows
- Transitions
- Rotate
- Gradients
- Text shadow
- Web fonts



Recommended Sites

<http://html5.timothyfisher.com>

<http://www.HTML5test.com>

<http://html5demos.com>

<http://caniuse.com>

s Presentation:

<http://www.slideshare.net/timothyf/html5-new-and-improv>