HTML5 and CSS3

Web Browser

→ Fetches/displays documents from web servers

→ Mosaic 1993

→ Firefox,IE,Chrome,Safari,Opera,Lynx,Mosaic,Konqueror
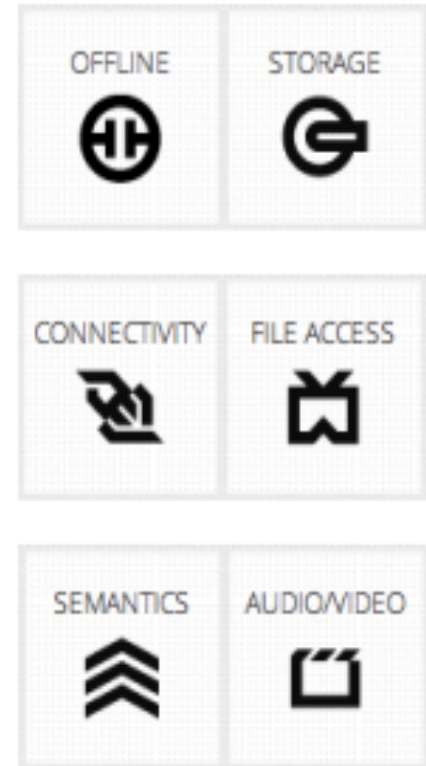 ◦ *There are standards, but wide variation in features*

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Desktop Browser Market Share

2015	Chrome	IE	Firefox	Safari	Opera
April	63.9 %	8.0 %	21.6 %	3.8 %	1.5 %
March	63.7 %	7.7 %	22.1 %	3.9 %	1.5 %
February	62.5 %	8.0 %	22.9 %	3.9 %	1.5 %
January	61.9 %	7.8 %	23.4 %	3.8 %	1.6 %

2014	Chrome	IE	Firefox	Safari	Opera
December	61.6 %	8.0 %	23.6 %	3.7 %	1.6 %
November	60.1 %	9.8 %	23.4 %	3.7 %	1.6 %
October	60.4 %	9.5 %	23.4 %	3.9 %	1.6 %
September	59.6 %	9.9 %	24.0 %	3.6 %	1.6 %
August	60.1 %	8.3 %	24.7 %	3.7 %	1.8 %

http://www.w3schools.com/browsers/browsers_stats.asp

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HTML5: New Features

- Semantic elements and Markups
- Audio and video support
- Canvas
- Drag and drop
- Local data storage
- Offline applications
- Server events
- Geolocation

OFFLINE   STORAGE

CONNECTIVITY   FILE ACCESS

SEMANTICS   AUDIO/VIDEO

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Semantic elements

A semantic element clearly describes its meaning to both the browser and the developer.

Examples of non-semantic elements: <div> and <span> - Tells nothing about its content.

Examples of semantic elements: <form>, <table>, and <img> - Clearly defines its content.

Semantic elements: some other

<header>   <nav>
<section>   <article>
<aside>   <figure>
<figcaption> <footer>
<details>   <summary>
<mark>   <time>

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Semantic elements: some other

```html
<figure>
<img src="nicodamus.jpeg">
    <figcaption>
        <p>Ground dweller: <i>Nicodamus bicolor</i> builds silk snares.</p>
        <p>A small hairy spider.
        <small>J. A. L. Cooke/OSF</small&gt</p>
    </figcaption>
</figure>
```
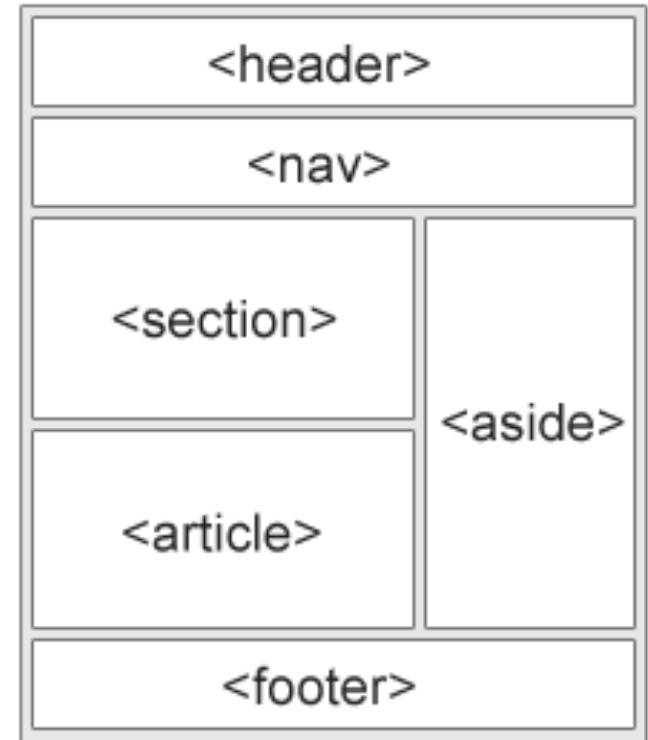
http://www.smashingmagazine.com/2011/11/html5-semantics/

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Audio & Video

Audio
```
<audio controls>
  <source src="horse.ogg" type="audio/ogg">
  <source src="horse.mp3" type="audio/mpeg">
Your browser does not support the audio element.
</audio>
```

Video
```
<video width="320" height="240" controls>
  <source src="movie.mp4" type="video/mp4">
  <source src="movie.ogg" type="video/ogg">
Your browser does not support the video tag.
</video>
```

Output: http://jsfiddle.net/mashiyat/g4hMX/

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Canvas

<canvas> element is used to draw graphics, on the fly, via scripting (usually JavaScript).

→ only a container for graphics. You must use a script to actually draw the graphics.

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Drag and drop

Drag and drop means when you "grab" an object and drag it to a different location.

→ In HTML5, drag and drop is part of the standard, and any element can be draggable.

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Using HTML5 we can store data locally within the user's browser.

→ Earlier, this was done with cookies. However, Web Storage is more secure and faster.

→ The data is not included with every server request, but used ONLY when asked for. It is also possible to store large amounts of data, without affecting the website's performance.

→ The data is stored in name/value pairs, and a web page can only access data stored by itself.

→ Unlike cookies, the storage limit is far larger (at least 5MB) and information is never transferred.

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Web Storage for local data storage & Offline app

Web Storage (localStorage and sessionStorage), and specifically the localStorage part of it, is a really simple key/value persistence system.

PRO: Really simple API. Already available in all major new browsers.

CON: No query language, schemas, really nothing you'd normally call a database. So it wouldn't scale well where you need to impose organization on a larger data set. No transactional safety into the standard. Might have race conditions and then have the risk of corrupt data.

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Indexed Database API

IndexedDB is basically a simple flat-file database with hierarchical key/value persistence and basic indexing.

PRO: NoSQL base.

CON: Available in new browsers, not all. If you wanted SQL, you're not getting it here. Though in the future, it might be a great building block for implementing a SQL engine for the browser.

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Web Storage for local data storage & Offline app

Web SQL Database
Web Sql is basically sqlite embedded into the browser.
PRO: Fast and pretty feature-rich sql implementation (besides select/insert/update/delete, you can do joins, inner selects, etc).

CON: Available in Chrome and webkit-based browsers (Safari, etc.) but not Firefox or IE. Also, its been deprecated however both andriod and IOS supports it and they don't plan to drop it any time soon.

Web Storage for local data storage & Offline app

Use web store wisely!

Before using web storage, check browser support for localStorage and sessionStorage:

```
if(typeof(Storage) !== "undefined") {
    // Code for localStorage/sessionStorage.
} else {
    // Sorry! No Web Storage support..
}
```

Server events

A server-sent event is when a web page automatically gets updates from a server.

Before, the web page would have to ask if any updates were available. With server-sent events, the updates come automatically.

Examples: Facebook/Twitter updates, stock price updates, news feeds, sport results, etc.

Browser Support

Geolocation

The HTML5 Geolocation API is used to get the geographical position of a user.

Since this can compromise user privacy, the position is not available unless the user approves it.

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CSS3

http://www.w3schools.com/css/css3_intro.asp

http://css3please.com/

http://codepen.io/yoksel/pen/nxgrp

http://codepen.io/estelle/pen/LyItm

CSS3 (Vendor prefix)

The CSS browser prefixes are:

Android: -webkit-
Chrome: -webkit-
Firefox: -moz-
Internet Explorer: -ms-
iOS: -webkit-
Opera: -o-
Safari: -webkit-

CSS3 (Vendor prefix is temporary)

Just a few years ago, to set a rounded corner on a box you had to write:

```
-moz-border-radius: 10px 5px;
-webkit-border-top-left-radius: 10px;
-webkit-border-top-right-radius: 5px;
-webkit-border-bottom-right-radius: 10px;
-webkit-border-bottom-left-radius: 5px;
border-radius: 10px 5px;
```

But now you really only need the standards version:

```
border-radius: 10px 5px;
```

Viewport

→ The viewport is the user's visible area of a web page.

→ The viewport varies with the device, and will be smaller on a mobile phone than on a computer screen.

→ `<meta name="viewport" content="width=device-width, initial-scale=1.0">`

References

1. http://www.w3schools.com/

2. http://www.cs.toronto.edu/~delara/courses/csc309/

3. http://uoft.fabspaces.cc/

4. http://jquery.com/

5. http://webdesign.about.com/od/css/a/css-vendor-prefixes.htm

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