Web Apps without the Web

Remy Sharp / @rem
What's what.
HTML5

Web Forms
Video
Canvas
Offline events
Offline applications
HTML5 Apps
"Offline Storage"
Offline cache
Data storage
1. Web Storage

2. Web SQL Databases

3. HTML5 offline applications

4. APIs of the future
Web Storage
(cookies on steroids)
Web Storage
(cookie on steroids)
Cookies Suck.
Two windows have access to the same "session" cookie
Storage

window based

sessionStorage

localStorage
Storage

window based

sessionStorage

domain based

localStorage
Setting

`sessionStorage.setItem('version', 5);`
Setting

sessionStorage.setItem('version', 5);

sessionStorage.version = 5;
Setting

```javascript
sessionStorage.setItem('version', 5);

sessionStorage.version = 5;

sessionStorage['version'] = 5;
```
<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>version</td>
<td>5</td>
</tr>
</tbody>
</table>

```javascript
sessionStorage.setItem('version', 5)
undefined
```
Getting

`sessionStorage.getItem('version');`
Getting

`sessionStorage.getItem('version');`

`sessionStorage.version;`
Getting

`sessionStorage.getItem('version');`

`sessionStorage.version;`

`sessionStorage['version'];`
sessionStorage.version = 5;

typeof sessionStorage.version; // ?
sessionStorage.version = 5;
typeof sessionStorage.version; // ?
Values are strings
Values are strings

Work around: JSON
(and http://www.json.org/json2.js)
Complex Objects

```
var ss = sessionStorage,
    user = { screen_name: 'rem',
             rating : 11 };
ss.setItem('user', JSON.stringify(user));
alert( JSON.parse(ss.getItem('user')).screen_name );
```
There's no security protecting the API

// Safari debugger broken:
sessionStorage.setItem('setItem', 12);
API

- `setItem(key, value)`
- `getItem(key)`
- `removeItem(key)`
- `length`
- `key(index)`
- `clear()`
What about supporting old browsers?
Pollyfilling
Just make it work
Just make it work

```javascript
if (!localStorage || !sessionStorage) (function () {

    var Storage = function (type) {
        ...
    }
    if (!localStorage) localStorage = new Storage('local');
    if (!sessionStorage) sessionStorage = new Storage('session');
})()

http://gist.github.com/350433
```
Realtime client push

We believe that the real-time web is fantastic and should be easy to implement. This is our simple solution, powered by HTML5 websockets.

- Allow your users to collaborate in realtime
- Add live status updates and messages
- Broadcast events to everyone viewing a page

Inspired by native Javascript events

Clients specify events they want to bind to in their Javascript:

```javascript
socket.bind('project-create',
function(){ /* add project into the UI */ })
```

Your server triggers events when your users interact and change the data:

```javascript
Pusher['channel'].trigger('project-create',
{ :name => 'foo' })
```

This code uses our open source RubyGem

Read the quickstart guide

Watch Pusher in action
Your server triggers events when your users interact and change the data:

```ruby
Pusher['channel'].trigger('project-create', {name: 'foo'});
```

This code uses our open source RubyGem

**Host in the cloud**

Pusher sits on Amazon's AWS architecture, so can easily scale to meet demand

**Complement your existing architecture**

We don't want to completely change our applications to use the realtime web, and assume others don't either.

**5 Utilize the power of HTML 5**

Using native Websockets browsers is a much more efficient means of communication than other methods such as long-polling

**Fall back to Flash for crap browsers**

While support for native Websockets is growing, the laggard browsers are still catered for by using an open source Flash solution.

**How it works**

Serve up instructions to clients to connect to a particular channel using your API key.

When clients interact with your server, trigger an JSON event to all the others.

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**Features**

- Lazy channel creation
- Open source client library
- Open source RubyGem
- Hosted event console
- JSON
- REST
- Push-based debug console
Chrome's native Web Sockets & Flash is used to fill the holes.
Web SQL Databases
(cookies on steroids on steroids)
Web SQL Databases
(cookies on steroids on steroids)
Web SQL Database API

1. openDatabase

2. db.transaction

3. transaction.executeSql
openDatabase

- Check for support
openDatabase

- Check for support
- Estimate db size
openDatabase

- Check for support
- Estimate db size
- Store return var
openDatabase

- Check for support
- Estimate db size
- Store return var
- Forget versioning for now
if (!window.openDatabase) {
    alert('No supported');
    return;
}
var db = openDatabase(
    'mydb', // name
    '1.0', // version
    'My First Database', // description
    2 * 1024 * 1024 // size, 2Mb
);
```javascript
var db = openDatabase('mydb', // name
    '1.0', // version
    'My First Database', // description
    2 * 1024 * 1024 // size, 2Mb
);
```
Question:
How do I open the database without knowing the version?
Question:
How do I open the database without knowing the version?
You can't.
transaction

- Container for running SQL
transaction

- Container for running SQL
- Queues executeSql
transaction

- Container for running SQL
- Queues executeSql
- Rolls back on error
db.transaction(function (tx) {
    tx.executeSql('CREATE TABLE foo (id unique, text)');
    tx.executeSql('INSERT INTO foo VALUES (1, "fooban")');
});
db.transaction(function (tx) {
  tx.executeSql('CREATE TABLE foo (id unique, text)');
  tx.executeSql('INSERT INTO foo VALUES (1, "foobart")');
});
1. create table & insert
2. drop table & (try) to insert
3. select count(*)
1. create table & insert
2. drop table & (try) to insert
3. select count(*)
1. create table & insert
2. drop table & (try) to insert
3. select count(*)
1. create table & insert
2. drop table & (try) to insert
3. select count(*)

Queue

Database
1. create table & insert
1. create table & insert
2. drop table & (try) to insert
3. select count(*)
1. create table & insert

3. select count(*)

Queue

Database

1. create table & insert
Queue

3. select count(*)

Database
1. create table & insert
Queue

Database
1. create table & insert
3. select count(*)
executeSql

- Both for read & write
executeSql

- Both for read & write
- Injection protection
executeSql

- Both for read & write
- Injection protection
- Callback gives results
db.transaction(function (tx) {
  tx.executeSql('SELECT * FROM foo');
});
db.transaction(function (tx) {
    tx.executeSql('SELECT * FROM foo');
});
db.transaction(function (tx) {
    tx.executeSql('SELECT * FROM foo');
});
tx.executeSql(
    'INSERT INTO foo VALUES (1, "foo")'
);
tx.executeSql(
    'INSERT INTO foo VALUES (?, ?),
    [id, userVariable]
);
tx.executeSql(
    'SELECT * FROM foo',
    [],
    function (tx, results) {
        var len = results.rows.length;
        for (var i = 0; i < len; i++) {
            alert(results.rows.item(i).text);
        }
    }
);
tx.executeSql(
    'SELECT * FROM foo',
    [],
    function (tx, results) {
        var len = results.rows.length;
        for (var i = 0; i < len; i++) {
            alert(results.rows.item(i).text);
        }
    }
);
tx.executeSql(
  'SELECT * FROM foo',
  [],
  function (tx, results) {
    var len = results.rows.length;
    for (var i = 0; i < len; i++) {
      alert(results.rows.item(i).text);
    }
  }
);
tx.executeSql(
    'SELECT * FROM foo',
    [],
    function (tx, results) {
        var len = results.rows.length;
        for (var i = 0; i < len; i++) {
            alert(results.rows.item(i).text);
        }
    });

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.
Offline
Offline

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.
Offline Apps

- Application cache / manifest
- Events: offline, online
- navigator.onLine property
navigator.onLine
http://icanhaz.com/rubiks
Using a Manifest

<!DOCTYPE html>
<html manifest="my.manifest">
<body>
<!-- my page -->
</body>
</html>
my.manifest

CACHE MANIFEST
app.html
css/style.css
gs/app.js
#version 13
The Manifest

1. Serve as text/manifest, by adding to mime.types:

    text/cache-manifest manifest
2. First line must be:

    CACHE MANIFEST
The Manifest

3. Including page is implicitly included in the cache.
The Manifest

4. Two further namespaces: NETWORK & FALLBACK

FALLBACK: / offline.html
5. Include some versioning to cache bust your manifest

# version 16
The process
Browser: request

Server: serve all

Browser: I have a manifest, cache assets

Server: serve manifest assets

Browser: applicationCache updated

Browser: reload

Server: 304 Not Modified

Browser: serve locally only request manifest file
Browser: request

Server: serve all
Browser: request

Server: serve all

Browser: I have a manifest, cache assets
Browser: I have a manifest, cache assets

Server: serve all manifest assets

Browser: request

Server: serve locally

Browser: serve manifest assets

Server: 304 Not Modified
Browser: request
Server: serve all manifest, cache assets
Browser: I have a manifest, cache assets
Server: serve manifest assets
Browser: applicationCache updated
Server: 304 Not Modified
Browser: I have a manifest, cache assets

Browser: request

Server: serve all

Server: serve manifest assets

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Browser: reload
Browser: request

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Browser: I have a manifest, cache assets

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Browser: reload

Browser: serve locally
Browser: request

Server: serve all
manifest assets

Browser: I have a manifest, cache assets

Server: serve manifest assets

Browser: applicationCache updated

Browser: reload

Browser: serve locally

Browser: only request manifest file

Server: 304 Not Modified
Problem: Change of content requires 2 refreshes

Browser: request
Server: serve all

Browser: I have a manifest, cache assets
Server: serve manifest assets

Browser: applicationCache updated
Server: 304 Not Modified

Browser: only request manifest file

Browser: reload
Server: 304 Not Modified

Browser: serve locally
document.body.onOnline = function () {
    // fire an update to the cache
    applicationCache.update();
};
document.body.onOnline = function () {
  // fire an update to the cache
  applicationCache.update();
};

applicationCache.onUpdateReady = function () {
  applicationCache.swapCache();
  notice('reload');
};
Notification API
Remy Sharp

...but that said, their phone support is top quality. Took the reference from the site, picked up from where the site broke, and sorted me.

from http://www.html5rocks.com/  Options  Dismiss

Remy Sharp

Used the wall to slide up and stand up from stroking the cat. Forgot about the railing. Scraped a lot of skin off my back. It hurt. A lot.

from http://www.html5rocks.com/  Options  Dismiss

Remy Sharp

Finished a dry run of the HTML5 talk I'm giving. Fits well, evening including some over-the-ledge-bleeding-edge stuff

from http://www.html5rocks.com/  Options  Dismiss
if (webkitNotifications.checkPermission() == 0) {
  webkitNotifications.createNotification(profile_image_url, name, text).show();
}
File API
Demo by Paul Rouget
For more information see hacks.mozilla.org
Image hosting service: twitpic
Device API
Very new, collection of specifications
Message API

Camera API
Message API

PIM API
(calender, contacts, tasks)

Camera API
Camera API

File System API

Message API

PIM API (calendar, contacts, tasks)
API-tastic!
html5demos.com
introducinghtml5.com

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