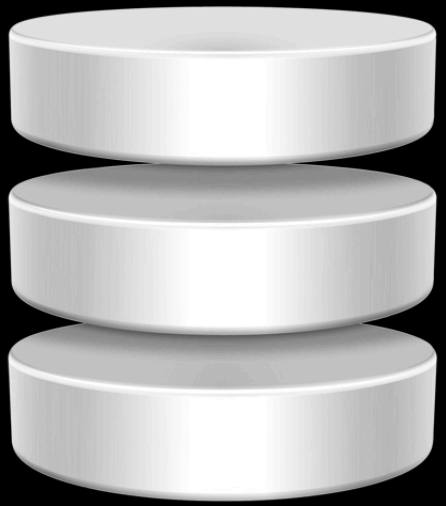
Using HTML5 Offline Storage

Brady Eidson
Safari and WebKit Engineer

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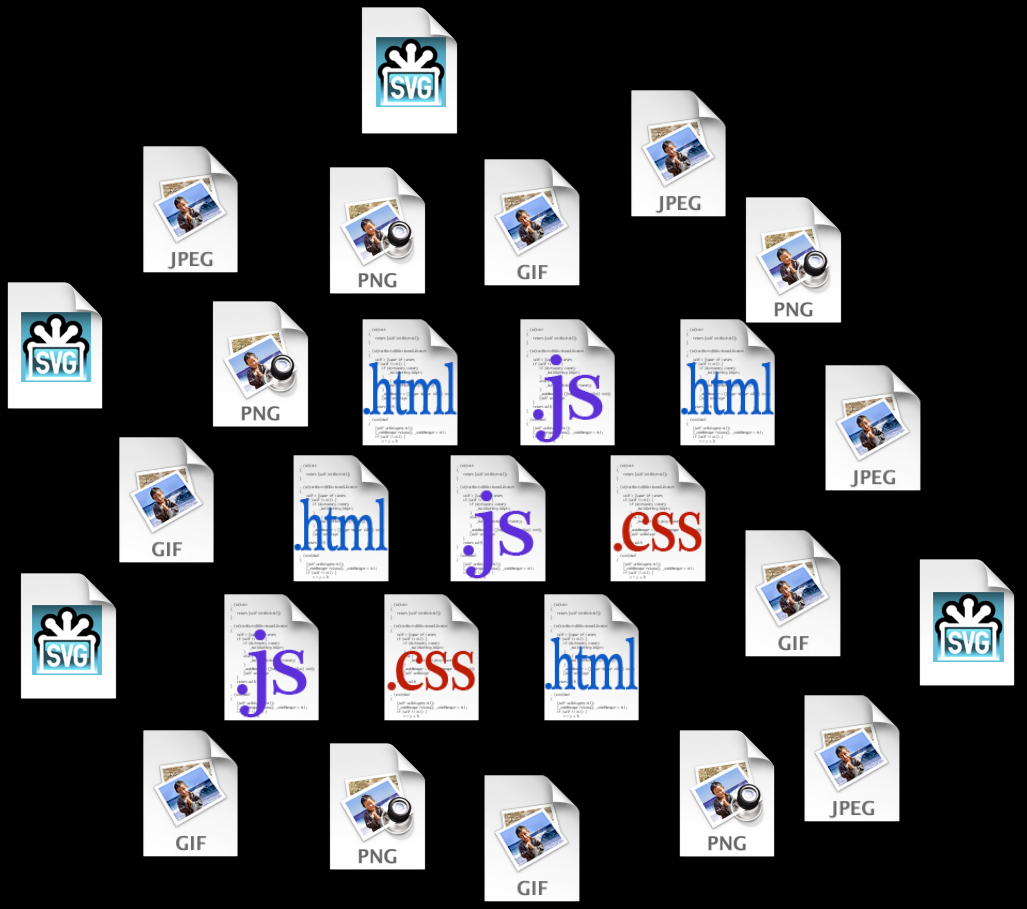
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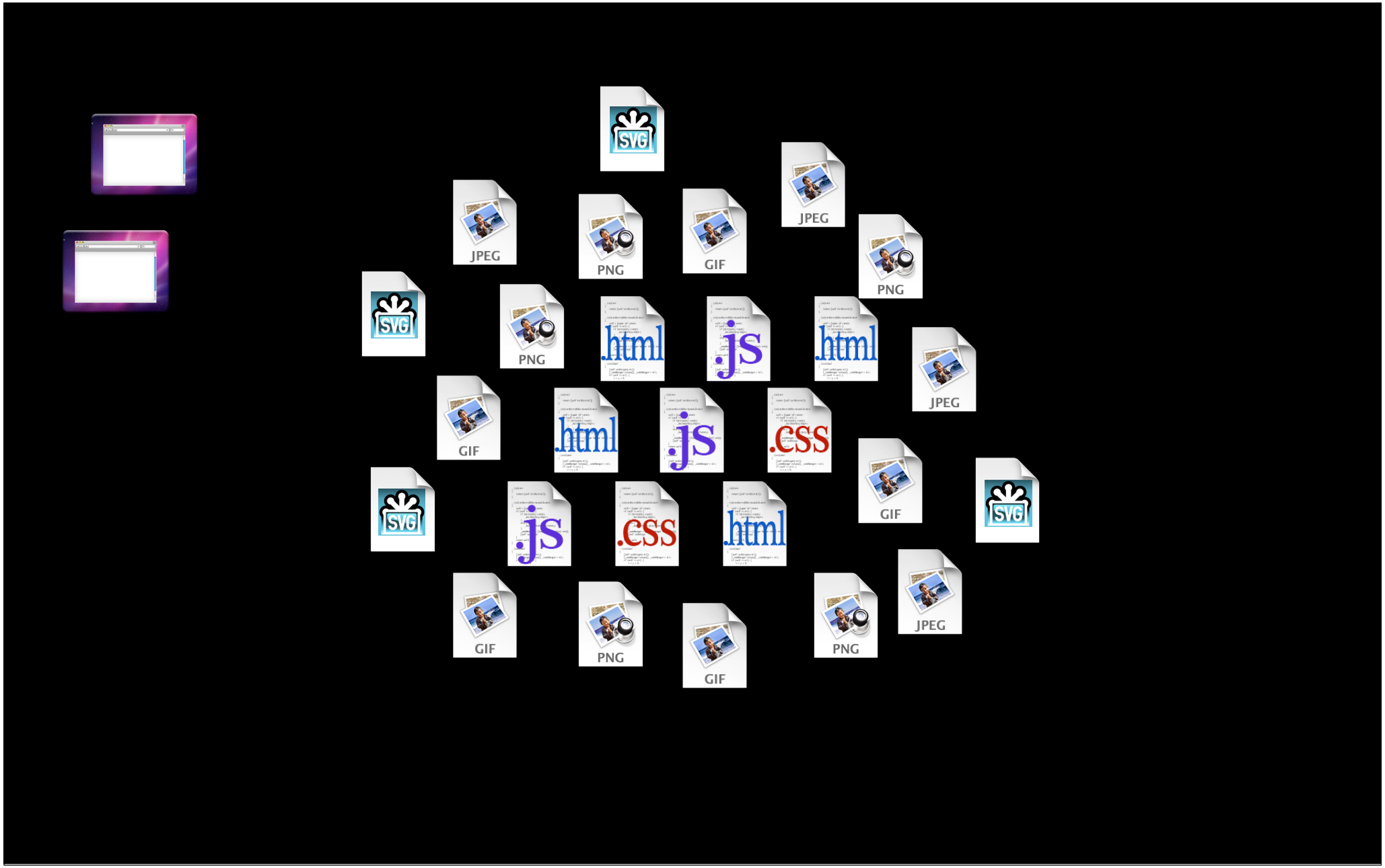
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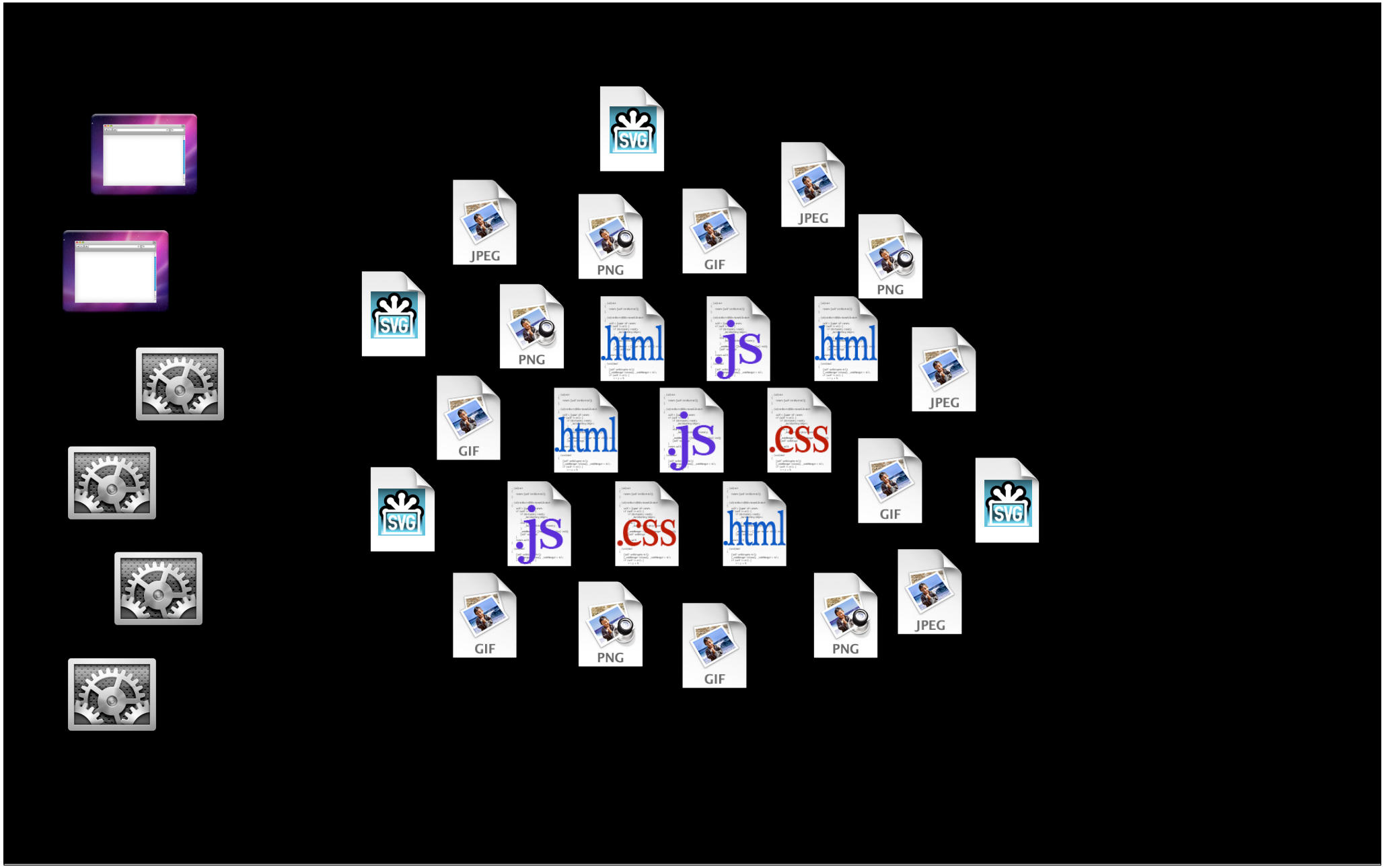
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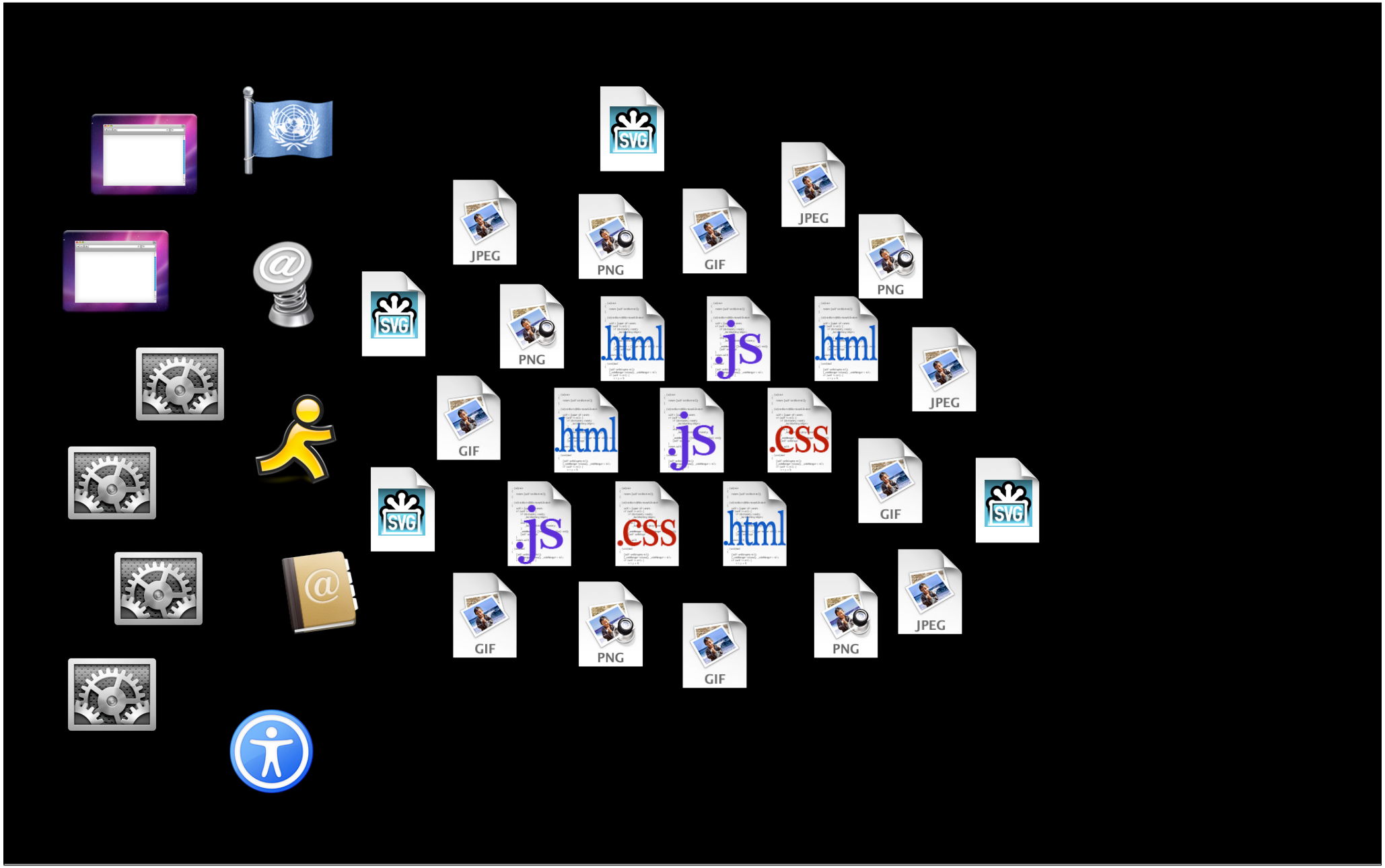
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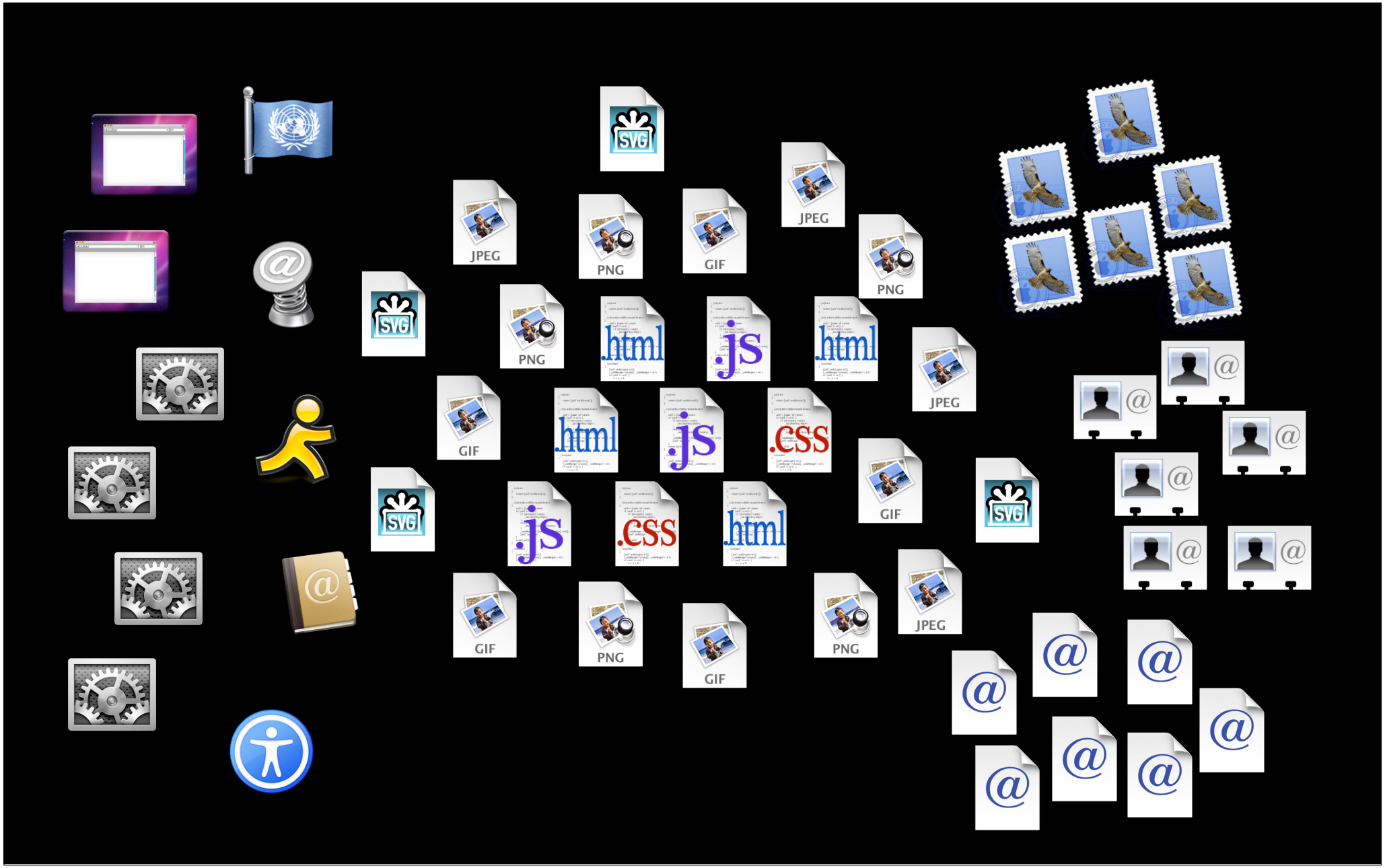
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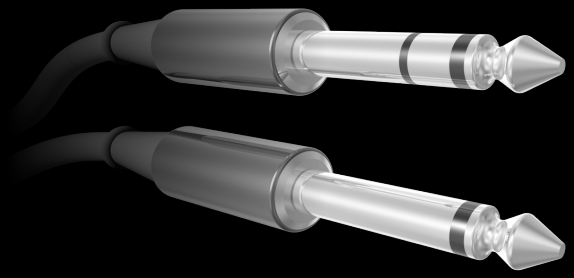

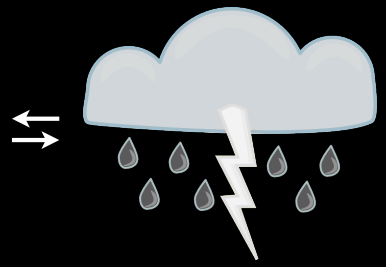

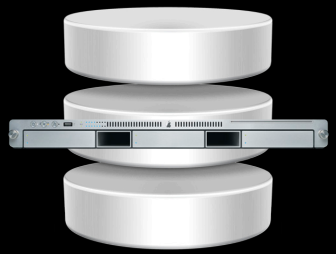


Web Standards
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HTML5


HTML5


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Contacts
YouTube
Stocks
Maps
Weather
Clock
Calculator
Notes
Settings
App Store
Music
Videos
Photos
iTunes

So what can I do without the cloud?

What You'll Learn

- Make apps accessible offline
- Persist simple data
- Data center in the browser

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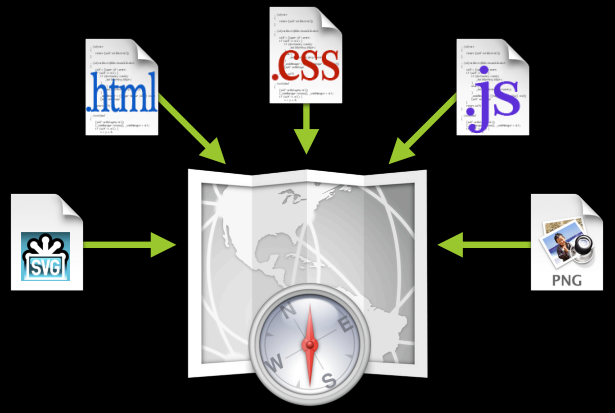
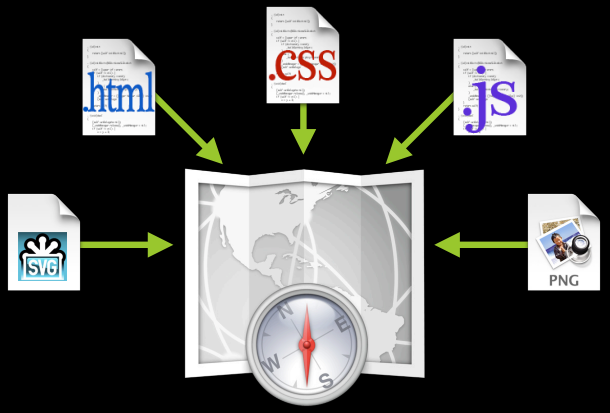


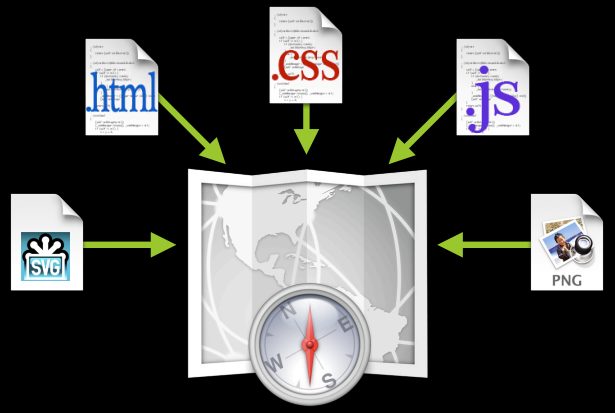
HTML5 Application Cache



HTML5 Application Cache

Overview

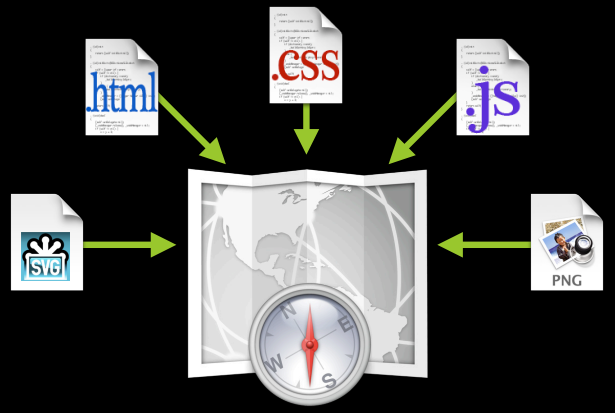
- Store entire application offline
- Automated atomic updates
- You specify a resource manifest
- A little nonmandatory API



HTML5 Application Cache

Advantages

- Your app works offline
- Your app works online…but faster!



HTML5 Application Cache

How applications are loaded

1. With a manifest, local copies of each resource are used

HTML5 Application Cache

How applications are loaded

2. Safari revalidates the manifest file in the background

HTML5 Application Cache

How applications are loaded

2. Safari revalidates the manifest file in the background

HTML5 Application Cache

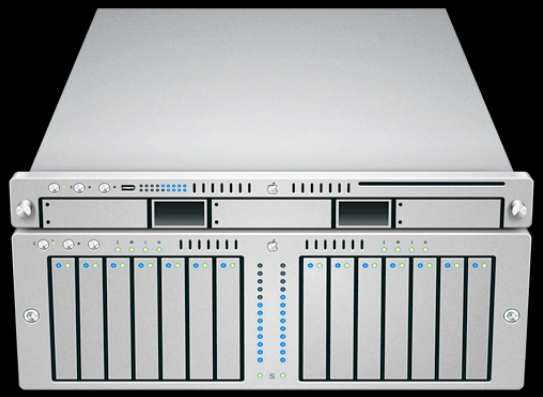
How applications are loaded

3. If the manifest changed, each individual resource is revalidated

HTML5 Application Cache

How applications are loaded

4. The new version of your application is ready to go



Application Cache Demo

HTML5 Application Cache

T-Spin demo

- Server must know the text/cache-manifest mime type
- Specify manifest in HTML
- Resources not in the manifest fail to load
- Server-side changes to manifest trigger an update
- Update process is automatic

Now that my app works offline…
…how about all the data it creates?

What You'll Learn

- Make apps accessible offline
- Persist simple data
- Data center in the browser

HTML5 Web Storage

HTML5 Web Storage

Overview

- Standard interface for storing items of data
- Items are key/value pairs
- Origin-based security
- Various implementations of the interface

HTML5 Web Storage

What implementations?

- SessionStorage for per-window data
- LocalStorage for global, persistent data
- Settings and SecureSettings in Safari extensions

HTML5 Web Storage

How do I use it?

```
function saveSessionAndQuit()
```

HTML5 Web Storage

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```
function saveSessionAndQuit()
{
  window.localStorage.WindowLocation = “32,117”;
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function saveSessionAndQuit()
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  localStorage[“SavingSession”] = true;
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HTML5 Web Storage

How do I use it?

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function saveSessionAndQuit()
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  window.localStorage.WindowLocation = “32,117”;

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  for (n in window.sessionStorage) { }
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HTML5 Web Storage

How do I use it?

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function saveSessionAndQuit()
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  for (n in window.sessionStorage) {
    localStorage.setItem(n, sessionStorage[n]);
  }
}
```

HTML5 Web Storage

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HTML5 Web Storage

How do I use it?

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function saveSessionAndQuit()
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  for (n in window.sessionStorage) {
    localStorage.setItem(n, sessionStorage[n]);
  }

  localStorage.removeItem(“SavingSession”);

  sessionStorage.clear();
}
```

Web Storage Demo

Featuring Andy Estes
Safari and WebKit Engineer

HTML5 Web Storage

T-Spin demo

- Use window.localStorage for global, persistent data
- Different ways to store and retrieve the same items

Now that I can store the simple stuff…
…how about a little more “oomph”?

What You'll Learn

- Make apps accessible offline
- Persist simple data
- Data center in the browser

HTML5 SQL Databases

HTML5 SQL Databases

Overview

- Real-world SQL
- Asynchronous and callback-based
- Origin-based security

HTML5 SQL Databases

Advantages of keeping it local

- Works offline
- Better performance
  - Faster fetching
  - Lower latency
  - Better battery life

HTML5 SQL Databases

Overview

- Real-world SQL
- Asynchronous and callback-based
- Origin-based security

Real-world SQL

Tables

Rows of Data

Indexes

Triggers

Transactions…

…are built in to the API

HTML5 SQL Databases

Executing a query

1. Get a database object to work with

Window

HTML5 SQL Databases

Executing a query

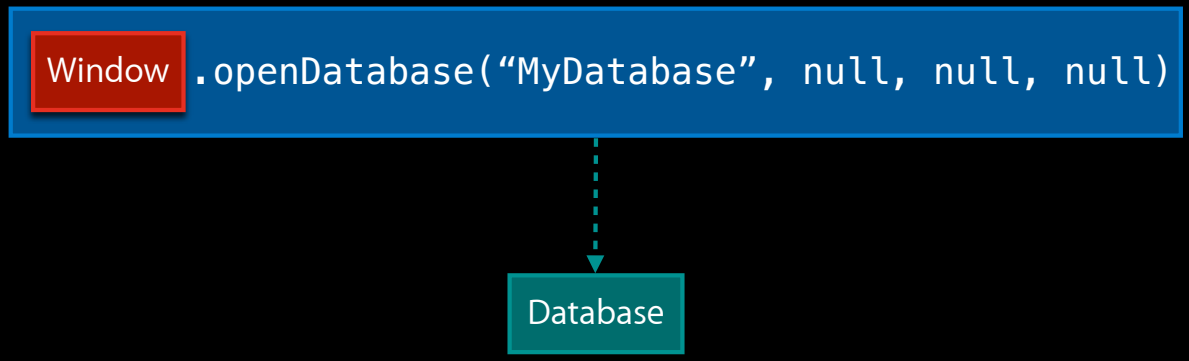
1. Get a database object to work with

```
Window.openDatabase("MyDatabase", null, null, null)
```

HTML5 SQL Databases

Executing a query

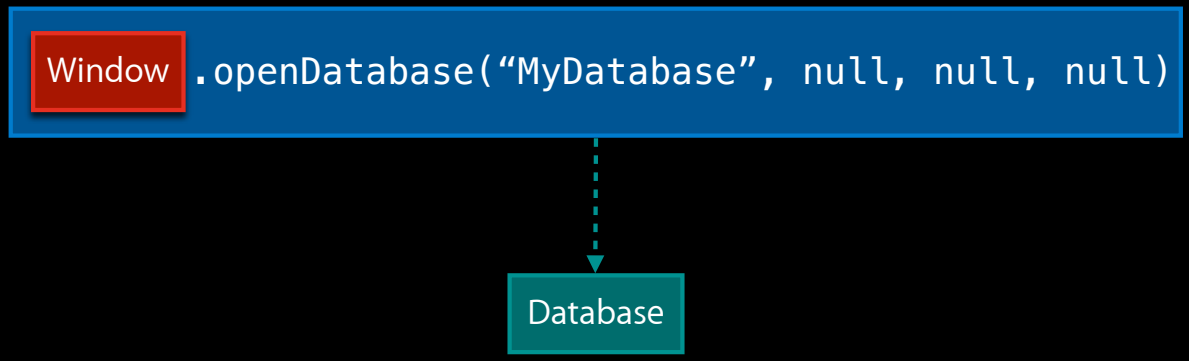
1. Get a database object to work with



HTML5 SQL Databases

Executing a query

1. Get a database object to work with



HTML5 SQL Databases

Executing a query

2. Start a SQLTransaction

Database

HTML5 SQL Databases

Executing a query

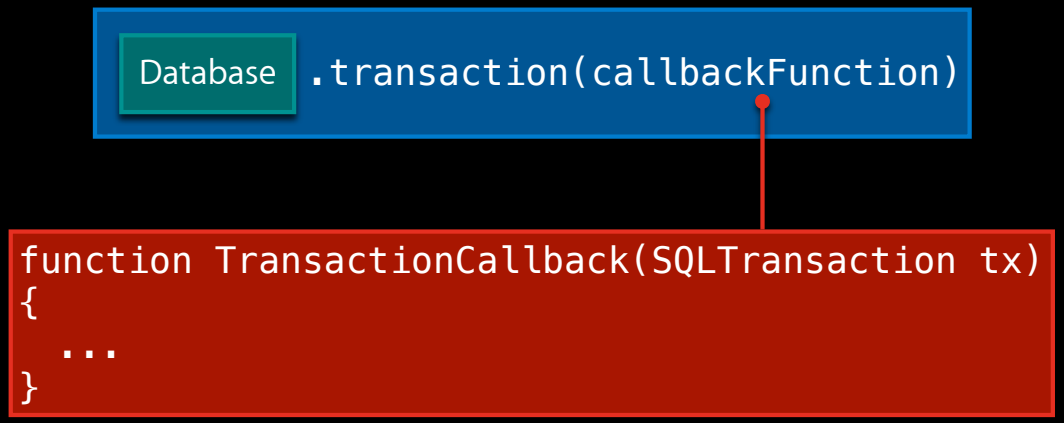
2. Start a SQLTransaction

```
Database .transaction(callbackFunction)
```

HTML5 SQL Databases

Executing a query

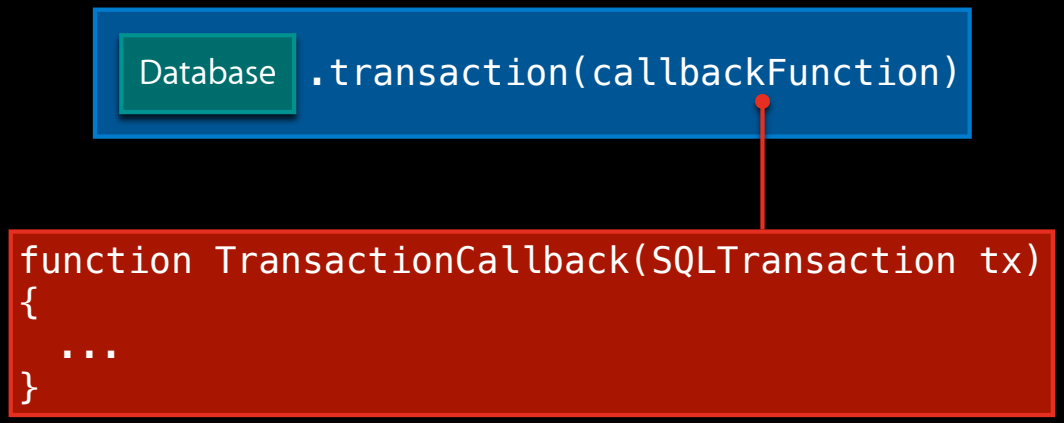
2. Start a SQLTransaction



HTML5 SQL Databases

Executing a query

2. Start a SQLTransaction



HTML5 SQL Databases

Executing a query

2. Start a SQLTransaction

```
function TransactionCallback(SQLTransaction tx)
{
  ...
}
```

SQLTransaction

HTML5 SQL Databases

Executing a query

2. Start a SQLTransaction

```
function TransactionCallback(SQLTransaction tx)
{
  ...
}
```

SQLTransaction

HTML5 SQL Databases

Executing a query

3. Execute some SQL!

SQLTransaction

HTML5 SQL Databases

Executing a query

3. Execute some SQL!

```
SQLTransaction .executeSql("CREATE TABLE testTable (id testValue)")
```

SQL Database Demo

HTML5 SQL Databases

Demo

- SQL queries available directly from JavaScript
- Handle complex, relational data in the browser
- Performance superior to the cloud

More Information

Vicki Murley
Safari Technologies Evangelist
vicki@apple.com

HTML5 Application Cache Specification
http://www.whatwg.org/specs/web-apps/current-work

HTML5 Web Storage Specification
http://dev.w3.org/html5/webstorage

HTML5 Web SQL Database Specification
http://dev.w3.org/html5/webdatabase

WebKit Open Source Project
http://www.webkit.org/
#webkit on irc.freenode.net

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

Labs

Safari Extensions Lab	Internet and Web Lab A Thursday 2:00PM
HTML5 Offline Storage Lab	Internet and Web Lab B Thursday 4:30PM
Safari Open Lab	Internet and Web Lab A Friday 9:00AM

Q&A

WWDC10