

CS 696 Emerging Web and Mobile Technologies  
Spring Semester, 2011  
Doc 7 Offline & Data  
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## References

Dive into HTML 5, Chapter 7, Mark Pilgrim, <http://diveintohtml5.org/storage.html>

Dive into HTML 5, Chapter 8, Mark Pilgrim, <http://diveintohtml5.org/offline.html>

W3C Web Storage, <http://dev.w3.org/html5/webstorage/>

W3C Web SQL Database, <http://dev.w3.org/html5/webdatabase/>

W3C Indexed Database API, <http://dvcs.w3.org/hg/IndexedDB/raw-file/tip/Overview.html>

HTML5 & CSS3 Develop with Tomorrow's Standards Today, Hogan, Pragmatic Programmers

Various Web pages as indicated on individual slides

# Countdown



# Offline Web App

Set of HTML, CSS, JavaScript files

Special manifest file lists all files in the app

Each HTML file links to the manifest

An offline aware browser

- Downloads all files listed in manifest into app cache

- Uses cached files unless manifest has changed

# Manifest File

## CACHE MANIFEST

style/default.css

images/sound-icon.png

images/background.png

## CACHE MANIFEST

/main/home

/main/app.js

/settings/home

/settings/app.js

<http://img.example.com/logo.png>

<http://img.example.com/check.png>

<http://img.example.com/cross.png>

Can use relative, absolute paths or full URLs

# Including the manifest in html

```
<!DOCTYPE HTML>  
<html manifest="sample.manifest">  
<body>  
...  
</body>  
</html>
```

file name must end in .manifest

# Manifest & Mime Types

manifest is of type text/cache-manifest

Not a standard mime type yet

Must add to Web server's list of mime types

Apache

Add to .htaccess file at top level

AddType text/cache-manifest .manifest

# Network Section

CACHE MANIFEST

NETWORK:

/tracking.cgi

\*

CACHE:

style/default.css

images/sound-icon.png

images/background.png

Files listed in network section

Never cached

Not available offline

Error to use them when offline

\* has special meaning

Allow access to files from other sites



# Fallback Section

CACHE MANIFEST

FALLBACK:

/ /offline.html

List alternative files

/ matches all files

CACHE:

style/default.css

images/sound-icon.png

images/background.png

# JavaScript Access

cache = window.applicationCache  
cache.status  
cache . update()

## Updates

update();  
swapCache();

## Events

onchecking  
onerror  
onnoupdate  
ondownloading  
onprogress  
onupdateready  
oncached  
onobsolete

# Gotcha's

List all the html files in the manifest

Make sure you add mime type

You have to modify the manifest before the page is downloaded again

CACHE MANIFEST

# v 1.0.0

style/default.css

images/sound-icon.png

images/background.png

# Tidbits

```
<head>
```

```
  <!-- page should fill screen -->
```

```
  <meta name="viewport" content="width=device-width, minimum-  
scale=1.0, maximum-scale=1.0">
```

```
  <!-- Full screen mode - dont' show URL bar -->
```

```
  <meta name="apple-mobile-web-app-capable" content="yes">
```

```
</head>
```

Data

Session Storage

Local Storage

Web SQL Database

Indexed Database API

# Session & Local Storage

Session storage is removed at end of session

Local storage remains until user deletes it

Both Session & Local  
5 MBs storage per site

Same API for both

Supported by  
IE 8.0+  
Firefox 3.5+  
Safari 4.0+  
Chrome 4.0+  
Opera 10.5+  
iPhone 2.0+  
Android 2.0+

# Checking for Support

```
if (Modernizr.localstorage){  
    // Take advantage of local storage that is persistent  
    // between tabs on the same site and can store MBs of data  
} else {  
    // resort to cookies as best you can  
}
```

```
if (Modernizr.sessionstorage){  
    // Take advantage of session storage in the browser that  
    // won't conflict between tabs on the same site  
} else {  
    // resort to cookies as best you can  
}
```

# Setters & Getters

```
localStorage.setItem("bar", foo);
```

```
var foo = localStorage.getItem("bar")
```

```
localStorage["bar"] = foo;
```

```
var foo = localStorage["bar"]
```

```
setItem(in DOMString key, in any value)  
getItem(in DOMString key);
```

setItem stores any data as a string

getItem always returns a string

```
sessionStorage.setItem("bar", foo);
```

```
var foo = sessionStorage.getItem("bar")
```



# Removing items

```
localStorage.removeItem("bar");
```

```
localStorage.clear();  
  remove all items
```

# Accessing Keys

```
var size = localStorage.length;
```

```
for (var k = 0; k < size; k++)  
    alert(localStorage.key(k));
```

length = number of keys

key(k) return k'th key

# Domains & Storage

Domains and subdomains have different storage

<http://sdsu.edu>

<http://eli.sdsu.edu>

Domains and subdomains can share a storage

Both domain and subdomain have to explicitly allow it

Different sites on same domain have same storage

<http://www.eli.sdsu.edu/courses/spring11/cs696/greatApp.html>

<http://www.eli.sdsu.edu/secondApp.html>

# Sample Use

```
function saveFormData() {  
    if (! Modernizr.localstorage) return false;  
    localStorage["firstname"] = firstname;  
    localStorage["lastname"] = lastname;  
    localStorage["itemRequested"] = cart.requestedItem;  
    return true;  
}
```

# Web SQL Database

# Web SQL Database

Webpages can access local database

Uses built-in SQLite database

W3C has stopped work on standard

W3C is working on Indexed Database API

No browser support Indexed Database API yet

Supported by

Safari 4.0+

Chrome 4.0+

iPhone 3.0+

Android 2.0+

# Basic Operations

openDatabase

Open existing database or create new one

transaction

Perform a transaction

executeSql

Execute an SQL statement

# Opening & Creating Database

```
openDatabase('grades', '1.0', 'Local grade storage', 5*1024*1024, function (db) {  
  db.changeVersion("", '1.0', function (t) {  
    t.executeSql('CREATE TABLE grades (id INTEGER Primary KEY, name TEXT,  
      grade TEXT)');  
  }, error);  
});
```

```
Database openDatabase(  
  in DOMString name,  
  in DOMString version,  
  in DOMString displayName,  
  in unsigned long estimatedSize,  
  in optional DatabaseCallback creationCallback);  
};
```



# Writing to Database

```
var db = openDatabase('mydb', '1.0', 'Test DB', 2 * 1024 * 1024);

db.transaction(function (tx) {
  tx.executeSql('CREATE TABLE IF NOT EXISTS LOGS (id unique, log)');
  tx.executeSql('INSERT INTO LOGS
                (id,log) VALUES (?, ?)', [10, "foo bar"]);
});
```

# Reading

```
loadNote = function(id){
  db.transaction(function(tx) {
    tx.executeSql('SELECT id, title, note FROM notes where id = ?', [id],
      function(SQLTransaction, data){
        var row = data.rows.item(0);
        var title = $("#title");
        var note = $("#note");
        title.val(row["title" ]);
        title.attr("data-id", row["id"]);
        note.val(row["note" ]);
        $("#delete_button" ).show();
      });
  });
}
```

# Database Version

Used to help keep track of which version is on client machine

```
db.changeVersion('1.0', '1.1', function (t) {  
  t.executeSql('CREATE TABLE grades (id INTEGER Primary KEY, name TEXT)');  
}, error);
```

```
db.changeVersion(  
  current version,  
  new Version,  
  callback to convert current version to new version  
  callback to handle errors,  
  callback to handle success)
```

# Indexed Database API

# Indexed Database API

New Standard

Not supported by any browser

Web SQL Database support in iPhone & Android likely to remain for some time

# Why All this Matters

# Example - Google Docs

Need way to give access to documents without network connection

MS Word works without network connection

# Example - Mobile Apps in HTML

