Apache Cordova In Action

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About me

- More than ten years of experience in Java enterprise and mobile solutions.
- Apache Committer.
- Author of four technical books.
- DeveloperWorks Contributing author.
- Technical Speaker (JavaOne, ApacheCon, Geecon, JavaLand ... etc)
- Advisory Software Engineer in IBM.
Agenda

- Apache Cordova Introduction
- Configurations
- Cordova Command Line
- Hello World Demo
- Cordova APIs Overview
- jQuery Mobile Integration Tips
- Memo Application Demo
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Apache Cordova Introduction

Device native functions examples:
## Apache Cordova Introduction

### Hybrid vs Native Application

<table>
<thead>
<tr>
<th></th>
<th>Hybrid Application (Cordova)</th>
<th>Native Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be uploaded to App Store</td>
<td>Yes</td>
<td>yes</td>
</tr>
<tr>
<td>Technology</td>
<td>HTML + CSS + JavaScript</td>
<td>Native platform Programming Language</td>
</tr>
<tr>
<td>Cross-mobiles support</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Development Speed</td>
<td>Faster</td>
<td>Slower</td>
</tr>
<tr>
<td>Uses Device Native Features</td>
<td>Yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
Apache Cordova Introduction

Cordova is supported on the following platforms:
Apache Cordova Introduction

Challenges of the current mobile apps development:

Many platforms and devices.

Different skills needed.

For Android: Java skills needed.

For iOS: Objective-C (or SWIFT) skills needed.

For Windows: C# skills needed.

Different problem types.

Huge Development and Testing Effort to have a single application on these platforms.
Apache Cordova Introduction

Who can use Cordova?

If you are a web developer and wants to develop a mobile application that can be deployed on the different app store portals.

If you are a mobile native developer and wants to develop a single application on the different mobile platforms without having to re-implement the application code on every platform.
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**Configuration**

### 1. Prerequisites:
- Node JS.
- GIT
- Target SDK.

### 2. From command line:

- `> sudo npm install -g cordova`

### 3. To know the installed version of Cordova:

- `> cordova -v`
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Cordova Command Line

To create an application:

> cordova create <<app_dir>> <<project_id>> <<app_title>>

To add a platform (from the app folder):

> cordova platform add <<platform_name>>

To build Cordova project:

> cordova build

To deploy the app on emulator:

> cordova emulate <<platform_name>>
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Native device functions are represented as plugins that can be added and removed using the command line.

Adding camera plugin example:

> cordova plugin add https://git-wip-us.apache.org/repos/asf/cordova-plugin-camera.git

Removing Camera plugin example:

> cordova plugin rm org.apache.cordova.core.camera
Cordova APIs Overview

Device

An object that holds information about the device hardware and software.

Device information is mainly about:
- Device name.
- Device Platform.
- Device Platform version.
- Device model.

“deviceready” event is an indicator that Cordova finishes loading and Cordova APIs are ready to be called.
An object that provides an access to the device camera. It can be used for:

- Capturing a photo using the device’s Camera.
- Picking a photo from the device’s gallery.

```javascript
navigator.camera.getPicture(onSuccess, onFail, {
  quality: 50,
  destinationType: Camera.DestinationType.DATA_URL
});

function onSuccess(imageData) {
  var image = document.getElementById('myImage');
  image.src = "data:image/jpeg;base64," + imageData;
}

function onFail(message) {
  alert('Failed because: ' + message);
}
```
Cordova APIs Overview

Media

An object that allows recording and playing back audio files on the device.

```javascript
var my_media = new Media("someFile.mp3", onSuccess, onError);
my_media.play();

function onSuccess() {
    console.log("playAudio():Audio Success");
}
function onError(error) {
    alert('code: ' + error.code + '
' + 'message: ' + error.message + '
');
}
```
Cordova APIs Overview

### Notification

An object that displays visual, audible, and tactile notification.

```javascript
// Show a native looking alert
navigator.notification.alert(
  'Cordova is great!', // message
  'Cordova', // title
  'Ok' // buttonName
);

// Beep four times
navigator.notification.beep(4);

// Vibrate for 3 seconds
navigator.notification.vibrate(3000);
```
Cordova APIs Overview

Storage

Provides an access to the W3C Web Storage interface:

- Local Storage (window.localStorage).
- Session Storage (window.sessionStorage).

```javascript
window.localStorage.setItem("key", "value");

var value = window.localStorage.getItem("key");

window.localStorage.removeItem("key");
window.localStorage.clear();
```
Cordova APIs Overview

Storage

Provides an access to the device Web SQL Database (Full featured database). Cordova supports IndexedDB for WP8 and Blackberry 10.

```javascript
function populateDB(tx) {
    tx.executeSql('DROP TABLE IF EXISTS DEMO');
    tx.executeSql('CREATE TABLE IF NOT EXISTS DEMO (id unique, data)');
    tx.executeSql('INSERT INTO DEMO (id, data) VALUES (1, "First row")');
    tx.executeSql('INSERT INTO DEMO (id, data) VALUES (2, "Second row")');
}

function errorCB(err) {
    alert("Error processing SQL: "+ err.code);
}

function successCB() {
    alert("success!");
}

var db = window.openDatabase("Demos", "1.0", "Cordova Demo", 200000);

db.transaction(populateDB, errorCB, successCB);
```
Cordova APIs Overview

More APIs:

- Events (Handle Apache Cordova life cycle events).
- Geolocation (Know your mobile location. API is W3C based)
- Accelerometer (Capture device motion)
- Compass (Get the device direction)
- Connection (Get the device connection)
- Contacts (Access to device contacts database).
- File (Access to device File system based on W3C File API)
- Globalization (Access to user locale information)
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jQuery Mobile Integration

jQuery Mobile is:

One of the most popular User Interface framework for building Mobile Web applications.

Uses HTML5 + CSS3 for layout pages with minimal scripting.

Compatible with most of the mobile and tablet browsers.
Cordova does not restrict using any specific JavaScript library but using a JavaScript library will save you a lot of time creating your own widgets from scratch.

jQuery Mobile is used in the demo application with Cordova to create the Memo utility.

There are also many cool frameworks you can use in your Cordova mobile apps such as:

- Angular JS + Ionic.
- Dojo mobile
- Sencha Touch.
Windows Phone 8 Issues:

Trimmed header title.

Footer is not aligned to bottom.

Fixes:

Set `ui-header` and `ui-title` classes’ `overflow` to `visible`.

Hide System Tray using app config (shell:SystemTray.isVisible = “False”).
iOS 7 (and 8) Issues:

Collision between jQM header title and iOS device status bar.

One of the possible workarounds:

Hide the status bar by adding and setting two properties in the app's .plist file:
1. The Status bar is initially hidden property set to the YES value.
2. The View controller-based status bar appearance property set to the NO value
In order to boost the performance of jQuery mobile with Cordova, it is recommended to disable transition effects as follows:

$.mobile.defaultPageTransition = 'none';

$.mobile.defaultDialogTransition = 'none';
jQuery Mobile Integration

- Use `cordova-jquery-npm` module to speed up adding ready-made jQuery mobile templates to your existing Cordova project. Available templates are:
  - Multiple pages.
  - Persistent Navigation bar for three pages.
  - External Panel Template.

- All what you need to do is to run `cordova-jquery` command from your project root and follow the template creation Wizard.

- `cordova-jquery-npm` module is an open source project that is available in:
  - https://github.com/Open-I-Beam/cordova-jquery-npm
MEMO APPLICATION

GitHub URL:
https://github.com/hazems/cordova-mega-app
<script>
    var number = 50;
    var obj = {
        number: 60,
        getNum: function () {
            var number = 70;
            return this.number;
        }
    };

    alert(obj.getNum());
    alert(obj.getNum.call());
    alert(obj.getNum.call({number: 20}));
</script>
Questions

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