Apache Cordova Cheat Sheet

A comprehensive guide to mobile app development with Cordova

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1. What is Apache Cordova?

Overview

Apache Cordova is an open-source mobile development framework that allows you to build mobile apps using standard web technologies - HTML, CSS, and JavaScript.

Cordova wraps your HTML/CSS/JS app into a native container which can access the device functions of several platforms.

Key Concepts

- **WebView:** The UI component that displays your web app
- **Plugins:** Bridge between JavaScript and native functionality
- **config.xml:** Configuration file for your app
- **Platforms:** Target mobile operating systems
- **Hooks:** Scripts that run at specific points in the build process

Prerequisites

- Node.js and npm
- Git
- Platform-specific SDKs:
  Android: Android Studio & SDK
  iOS: Xcode (Mac only)
  Windows: Visual Studio

Installation

```
npm install -g cordova
```

Verify installation:

```
cordova --version
```

2. Essential Cordova Commands

Project Creation & Management

```
# Create a new project
cordova create path [id [name [config]]]

# Example
cordova create MyApp com.example.myapp MyAppName

# Add a platform
cordova platform add platform
cordova platform add android
cordova platform add ios

# Remove a platform
cordova platform remove platform

# List installed platforms
cordova platform ls

# Check platform requirements
cordova requirements
```

Build & Run

```
# Build the app
cordova build
cordova build platform

# Run the app
cordova run platform
cordova run android
cordova run ios

# Build for production
cordova build platform --release

# Run with live reload (requires cordova-plugin-browsersync)
cordova run platform --live-reload

# Emulate on a virtual device
cordova emulate platform
```

Plugin Management

```
# Add a plugin
cordova plugin add plugin-id

# Remove a plugin
cordova plugin remove plugin-id

# List installed plugins
cordova plugin ls

# Search for plugins
cordova plugin search keyword

# Add plugin with specific version
cordova plugin add plugin-id@version
```

3. Essential Cordova Plugins

Core Plugins

Camera
Take pictures or videos, or get them from the device's gallery

```
cordova plugin add cordova-plugin-camera
```

Device

Get device information

```
cordova plugin add cordova-plugin-device
```

File
Read/write files on the device

```
cordova plugin add cordova-plugin-file
```

Geolocation
Access GPS data

```
cordova plugin add cordova-plugin-geolocation
```

Popular Plugins

Local Notifications
Schedule local notifications

```
cordova plugin add cordova-plugin-local-notification
```

InAppBrowser
Open URLs in an in-app browser

```
cordova plugin add cordova-plugin-inappbrowser
```

SQLite Storage
SQLite database storage

```
cordova plugin add cordova-sqlite-storage
```

Social Sharing
Share content via social networks

```
cordova plugin add cordova-plugin-x-socialsharing
```

Plugin Usage Example

```
// Camera Plugin Example
document.getElementById('cameraButton').addEventListener('click', function() {
    navigator.camera.getPicture(onSuccess, onFail, {
        quality: 50,
        destinationType: Camera.DestinationType.DATA_URL
    });

    function onSuccess(imageData) {
        var image = document.getElementById('myImage');
        image.src = "" + imageData;
    }

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

4. Configuration

config.xml

The main configuration file for your Cordova project.

```
<?xml version='1.0' encoding='utf-8'?>
<widget id="com.example.myapp" version="1.0.0"
        xmlns="http://www.w3.org/ns/widgets"
        xmlns:cdv="http://cordova.apache.org/ns/1.0">
    <name>MyApp</name>
    <description>Sample Cordova App</description>
    <author email="dev@example.com" href="http://example.com">
        My Team
    </author>

    <content src="index.html" />

    <!-- Preferences -->
    <preference name="DisallowOverscroll" value="true" />
    <preference name="Orientation" value="portrait" />

    <!-- Plugins -->
    <plugin name="cordova-plugin-whitelist" spec="1" />

    <!-- Access origins -->
    <access origin="*" />

    <!-- Platform specific settings -->
    <platform name="android">
        <!-- Android specific settings -->
    </platform>

    <platform name="ios">
        <!-- iOS specific settings -->
    </platform>
</widget>
```

Common Preferences

Preference	Description
Orientation	App orientation (portrait, landscape, default)
Fullscreen	Whether to display in fullscreen mode
BackgroundColor	Background color of the app
StatusBarOverlaysWebView	Whether status bar overlays WebView
SplashScreen	Splash screen settings

App Icons & Splash Screens

```
<platform name="android">
    <!-- App icons -->
    <icon src="res/android/icon-36-ldpi.png" density="ldpi" />
    <icon src="res/android/icon-48-mdpi.png" density="mdpi" />
    <icon src="res/android/icon-72-hdpi.png" density="hdpi" />
    <icon src="res/android/icon-96-xhdpi.png" density="xhdpi" />

    <!-- Splash screens -->
    <splash src="res/android/splash-land-hdpi.png" density="land-hdpi"/>
    <splash src="res/android/splash-land-ldpi.png" density="land-ldpi"/>
    <splash src="res/android/splash-land-mdpi.png" density="land-mdpi"/>
    <splash src="res/android/splash-land-xhdpi.png" density="land-xhdpi"/>
</platform>

<platform name="ios">
    <!-- iOS icons -->
    <icon src="res/ios/icon-60@3x.png" width="180" height="180" />
    <icon src="res/ios/icon-60.png" width="60" height="60" />
    <icon src="res/ios/icon-60@2x.png" width="120" height="120" />

    <!-- iOS splash screens -->
    <splash src="res/ios/Default@2x~universal~anyany.png" />
</platform>
```

Security & Permissions

```
<!-- Network access -->
<access origin="*" />
<access origin="https://*.example.com" />

<!-- Intent whitelist (Android) -->
<allow-intent href="http://*/*" />
<allow-intent href="https://*/*" />
<allow-intent href="tel:*" />
<allow-intent href="sms:*" />
<allow-intent href="mailto:*" />
<allow-intent href="geo:*" />

<!-- Navigation whitelist -->
<allow-navigation href="https://example.com/*" />

<!-- Android permissions -->
<platform name="android">
    <config-file target="AndroidManifest.xml" parent="/*">
        <uses-permission android:name="android.permission.CAMERA" />
        <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    </config-file>
</platform>
```

5. Development Workflow

Project Structure

```
my-app/
├── config.xml      // Main configuration file
├── hooks/          // Custom build scripts
├── platforms/      // Platform-specific code (auto-generated)
├── plugins/        // Installed plugins (auto-generated)
├── www/            // Web assets (HTML, CSS, JS)
│   ├── css/
│   ├── img/
│   ├── js/
│   └── index.html  // Main entry point
└── package.json    // Project dependencies
```

Development Cycle

1. **Create project**

```
cordova create MyApp
```

2. **Add platforms**

```
cordova platform add android ios
```

3. **Add plugins**

```
cordova plugin add cordova-plugin-camera
```

4. **Develop in www/ folder**
   Edit HTML, CSS, and JavaScript files
5. **Test in browser**

```
cordova serve
```

6. **Test on device/emulator**

```
cordova run android
```

7. **Build for production**

```
cordova build android --release
```

Using with Frameworks

React

```
# Create React app
npx create-react-app my-app
cd my-app

# Build React app
npm run build

# Create Cordova app
cordova create cordova-app
cd cordova-app

# Copy React build to www
rm -rf www
cp -r ../my-app/build www

# Add platforms and build
cordova platform add android
cordova build android
```

Vue.js

```
# Create Vue app
npm create vue@latest my-vue-app
cd my-vue-app

# Configure publicPath in vue.config.js
module.exports = {
  publicPath: ''
}

# Build Vue app
npm run build

# Create Cordova app
cordova create cordova-app
cd cordova-app

# Copy Vue build to www
rm -rf www
cp -r ../my-vue-app/dist www

# Add platforms and build
cordova platform add android
cordova build android
```

Hooks

Hooks are scripts that run at specific points in the Cordova build process.

```
// hooks/after_prepare/01_modify_config.js
#!/usr/bin/env node

var fs = require('fs');
var path = require('path');

module.exports = function(context) {
    console.log('Running custom hook!');

    // Example: Modify config.xml
    var configXml = path.join(context.opts.projectRoot, 'config.xml');
    var configData = fs.readFileSync(configXml, 'utf8');

    // Make modifications...

    fs.writeFileSync(configXml, configData, 'utf8');

    return Promise.resolve();
};
```

Don't forget to make hook scripts executable: `chmod +x hooks/after_prepare/01_modify_config.js`

6. Troubleshooting

Common Issues & Solutions

Build Errors

Error: Could not find gradle wrapper within Android SDK.

Solution:

1. Make sure Android SDK is properly installed
2. Set ANDROID_HOME environment variable
3. Run: `cordova clean android`

Plugin Issues

Error: Plugin not found or failed during installation

Solution:

1. Check plugin ID and version
2. Remove platform and add it again: `cordova platform rm android && cordova platform add android`
3. Check for plugin compatibility with your Cordova version

White Screen / App Not Loading

App shows white screen or doesn't load content

Solution:

1. Check console logs using remote debugging
2. Verify Content-Security-Policy in index.html
3. Make sure deviceready event is properly handled
4. Check network access permissions in config.xml

Debugging Tools

Android Debugging

- Use Chrome DevTools: `chrome://inspect/#devices`
- Enable USB debugging on device
- View logs with `adb logcat`
- Add to index.html for console logging:

```
<script>
    console.log = function(msg) {
        navigator.notification.alert(
            msg, null, 'Debug', 'OK'
        );
    };
</script>
```

iOS Debugging

- Use Safari Web Inspector
- Enable Web Inspector in iOS Settings
- Connect device to Mac
- Open Safari > Develop > [Your Device] > [Your App]
- View logs in Xcode Console

Performance Optimization

- **Minimize DOM manipulation**
  Use frameworks like React or Vue for efficient DOM updates
- **Optimize images**
  Compress images and use appropriate formats (WebP, SVG)
- **Reduce plugin usage**
  Only include plugins you actually need
- **Use hardware acceleration**

```
.accelerated {
    transform: translateZ(0);
    will-change: transform;
}
```

- **Lazy load resources**
  Load resources only when needed
- **Use local storage wisely**
  Cache data but don't overuse storage

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Official Docs GitHub Stack Overflow