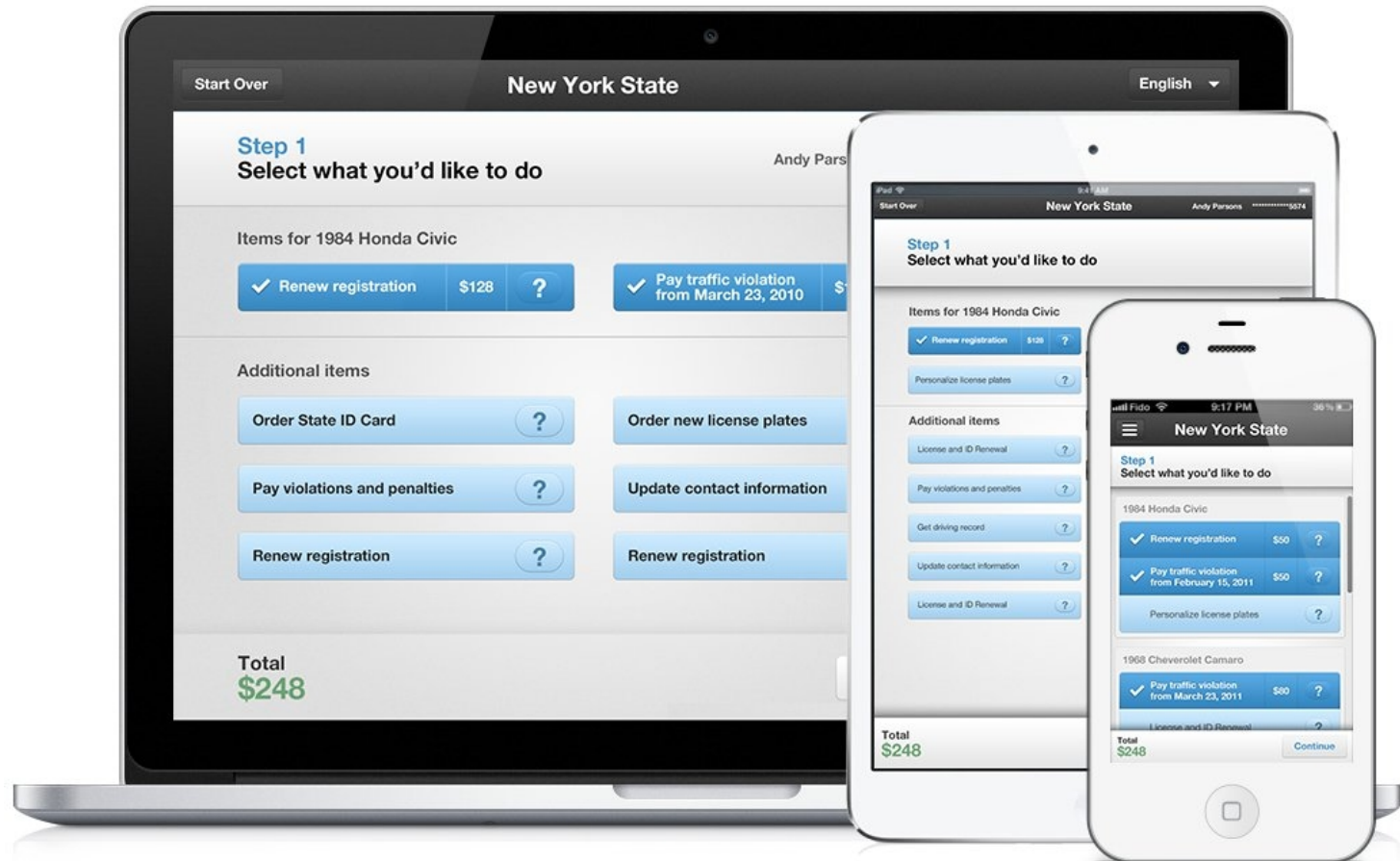# Mobile Programming
[week 11]
[Web Application]

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Cross Platform App

Mobile App Dev Strategies

- **Native Apps**

  Apps developed that are Mobile platform specific. They are developed using the native code sdks and will be very specific coding related to that platform.
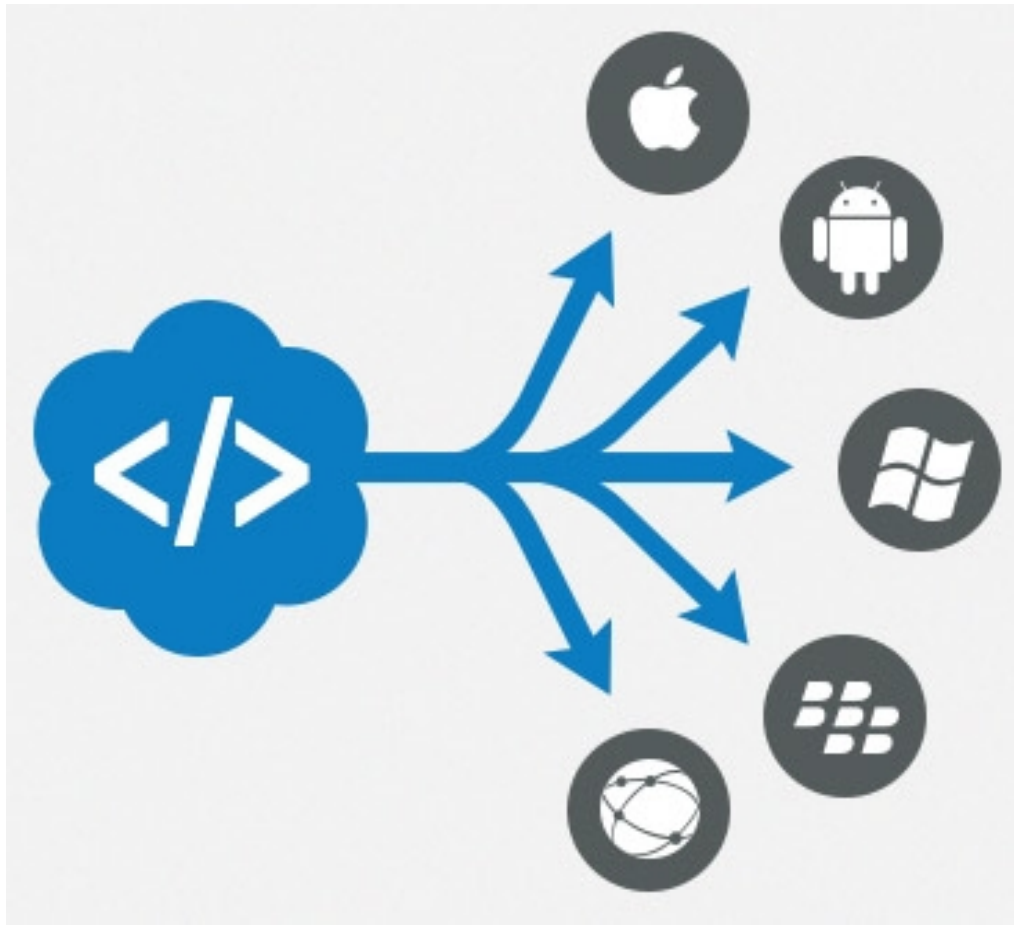
- **Web Apps**

  Apps developed using standard web technologies: HTML5, JavaScript and CSS.

- **Hybrid Apps**

  In this app, majority of the app is developed using web standards and is wrapped in a native shell/wrapper. These wrappers give access to mobile platform specific features like GPS or camera, native app UI look and feel, etc.

Web Apps

Android WebView

```xml
<?xml version="1.0" encoding="utf-8"?>
<WebView  xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/webview"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
/>
```
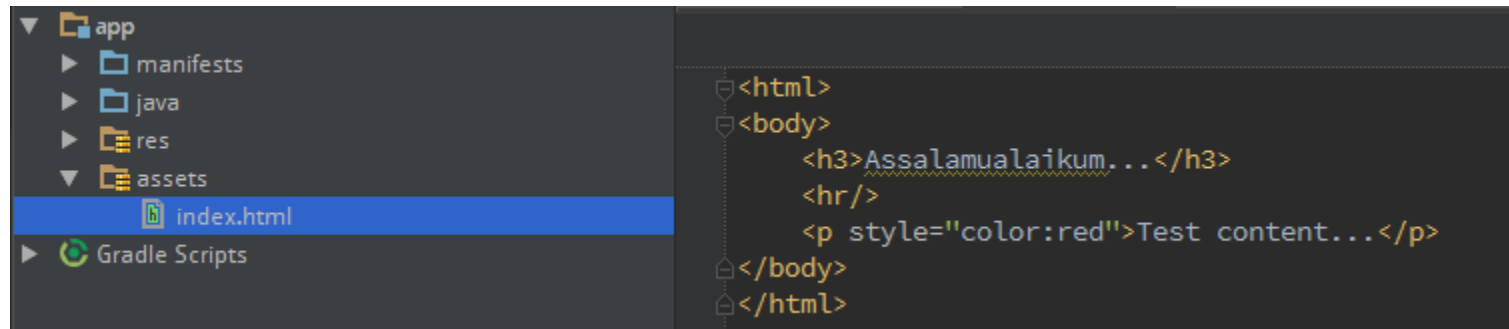
Android WebView

```java
public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        WebView myWebView = (WebView) findViewById(R.id.webview);
        myWebView.loadUrl("http://www.nurulfikri.ac.id");
    }

}
```

```xml
<uses-permission android:name="android.permission.INTERNET" />
```

Android WebView

Android WebView (local)


```html
<html>
<body>
    <h3>Assalamualaikum...</h3>
    <hr/>
    <p style="color:red">Test content...</p>
</body>
</html>
```
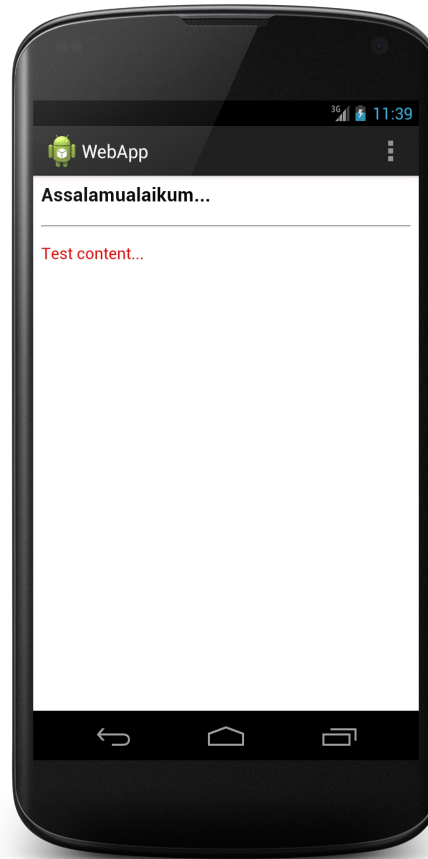
```java
public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        WebView myWebView = (WebView) findViewById(R.id.webview);
        myWebView.loadUrl("file:///android_asset/index.html");

    }

}
```

Android WebView (local)
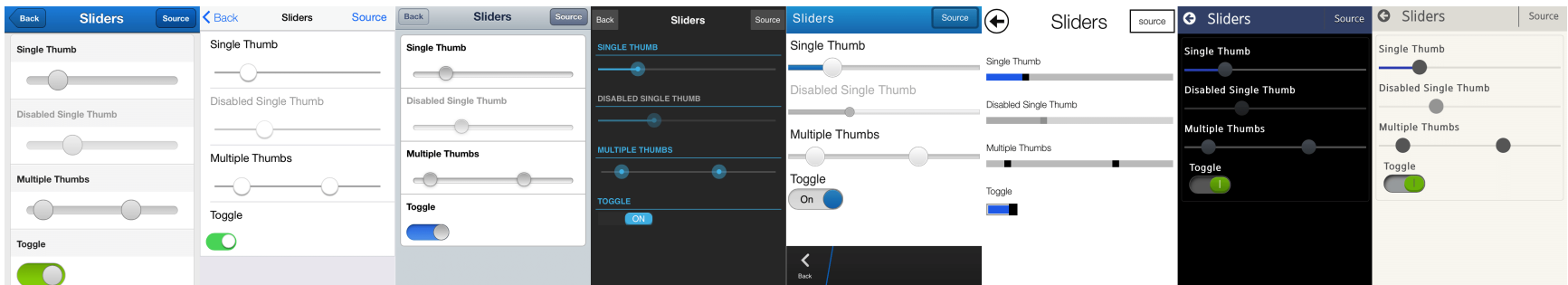
Mobile Web App Framework

Mobile Web App Framework

Jquery Mobile example

```html
<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Simple page example</title>
    <link rel="stylesheet" href="css/themes/default/jquery.mobile-1.4.5.min.css">
    <script src="js/jquery.js"></script>
    <script src="js/jquery.mobile-1.4.5.min.js"></script>
</head>
<body>
<!-- Page -->
<div data-role="page">
    <div data-role="header">
        <h1>Single Page Example</h1>
    </div><!-- /header -->
    <div role="main" class="ui-content">
        <ul data-role="listview">
            <li>Satu</li>
            <li>Dua</li>
            <li>Tiga</li>
        </ul>
    </div><!-- /content -->
    <div data-role="footer">
        <h4>Footer content</h4>
    </div><!-- /footer -->
</div><!-- /page -->
</body>
</html>
```
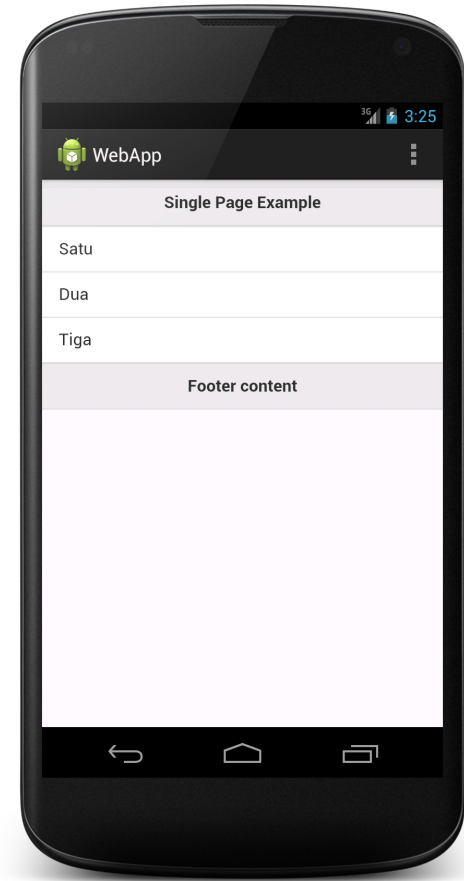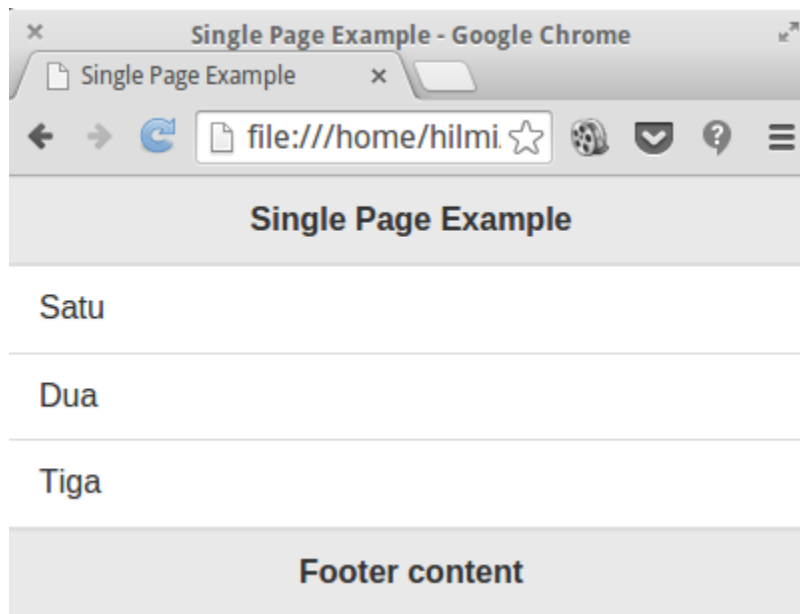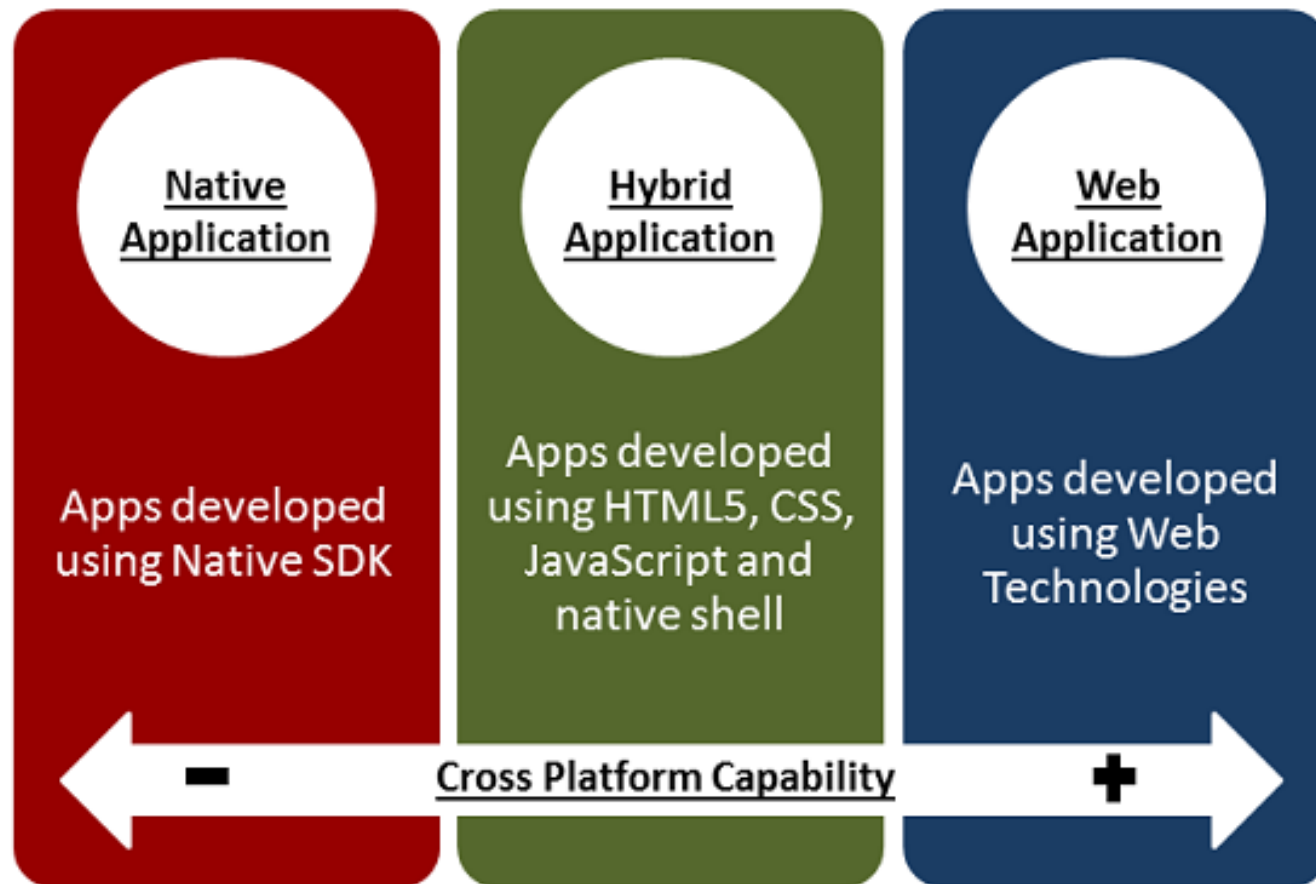
Jquery Mobile example

```java
public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        WebView myWebView = (WebView) findViewById(R.id.webview);
        //enable javascript
        WebSettings ws = myWebView.getSettings();
        ws.setJavaScriptEnabled(true);
        myWebView.loadUrl("file:///android_asset/index.html");

    }

}
```
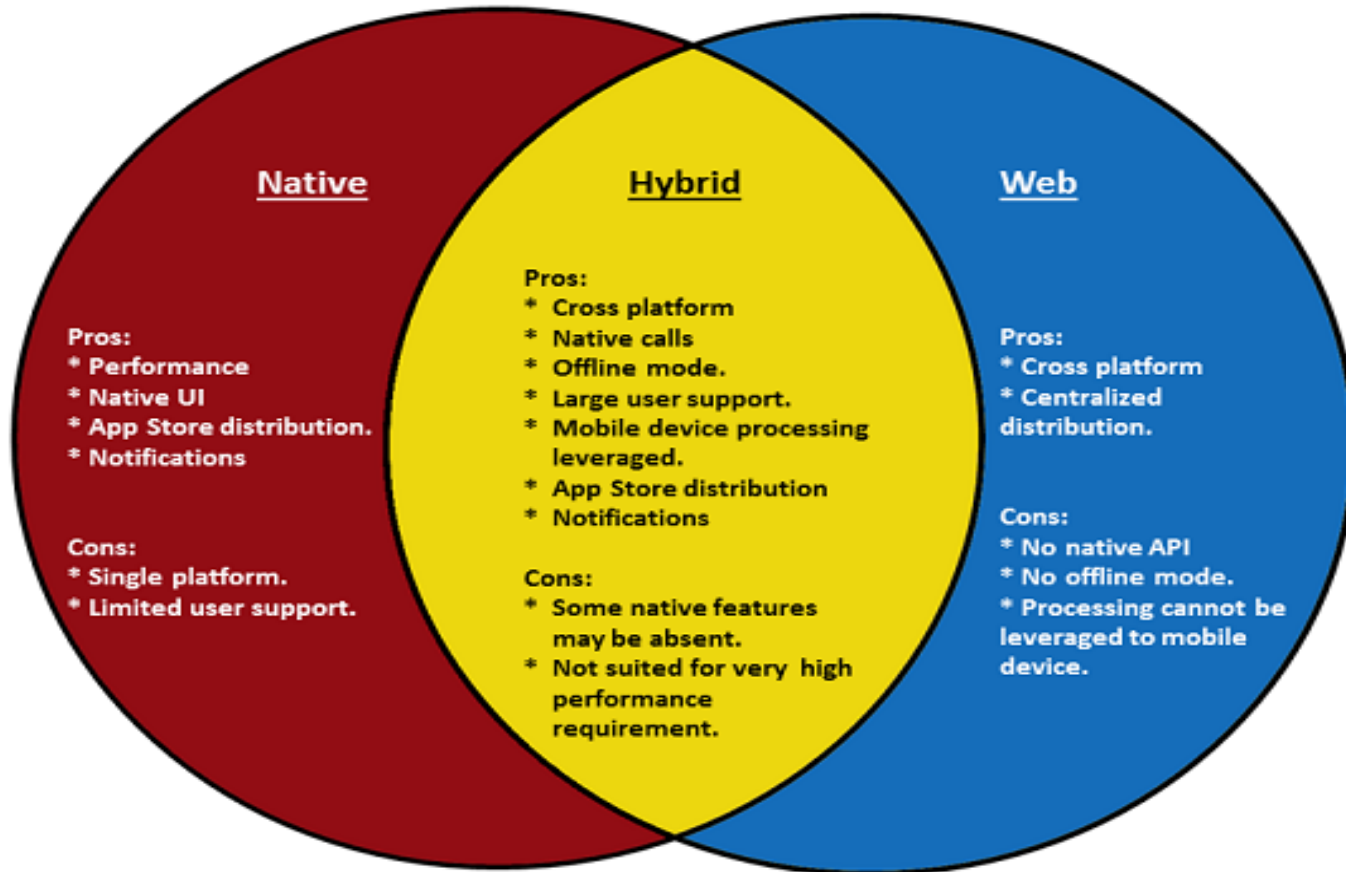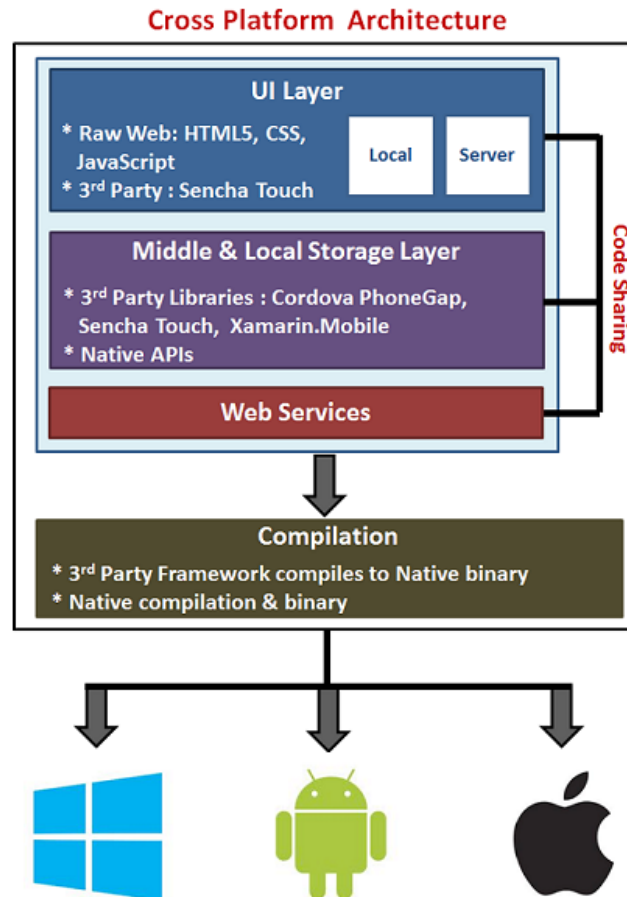
Jquery Mobile example

Mobile App Dev Strategies

Mobile App Dev Strategies

Native

Pros:
* Performance
* Native UI
* App Store distribution.
* Notifications

Cons:
* Single platform.
* Limited user support.

Hybrid

Pros:
* Cross platform
* Native calls
* Offline mode.
* Large user support.
* Mobile device processing leveraged.
* App Store distribution
* Notifications

Cons:
* Some native features may be absent.
* Not suited for very high performance requirement.

Web

Pros:
* Cross platform
* Centralized distribution.

Cons:
* No native API
* No offline mode.
* Processing cannot be leveraged to mobile device.

Hybrid App

Cross Platform Architecture

Introduction to PhoneGap

Install nodejs

```
hilmi@hilmi-book:~$ sudo apt-get install nodejs
```

Install npm

```
hilmi@hilmi-book:~$ sudo apt-get install npm
```
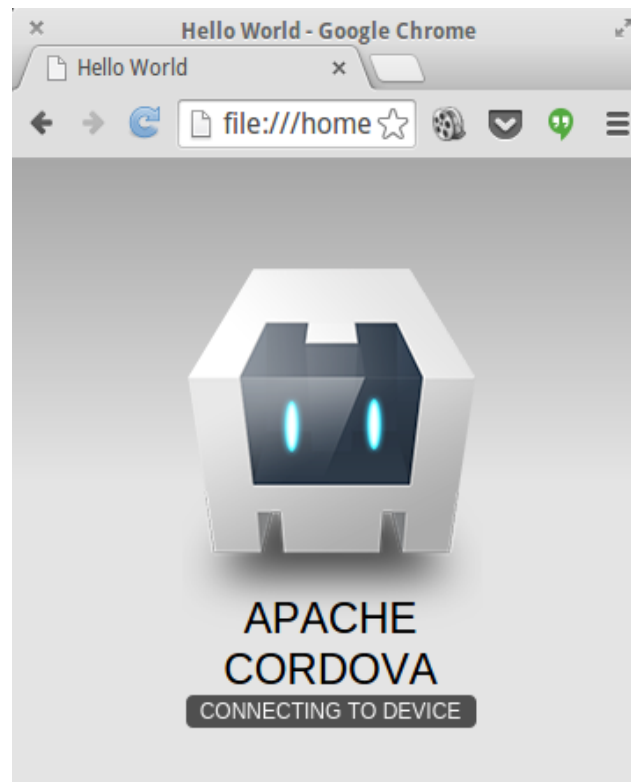
Install phonegap

```
hilmi@hilmi-book:~$ npm install phonegap
```

Create project

```
hilmi@hilmi-book:~$ cordova create myfirstapp com.week11.myfirstapp MyFirstApp
```

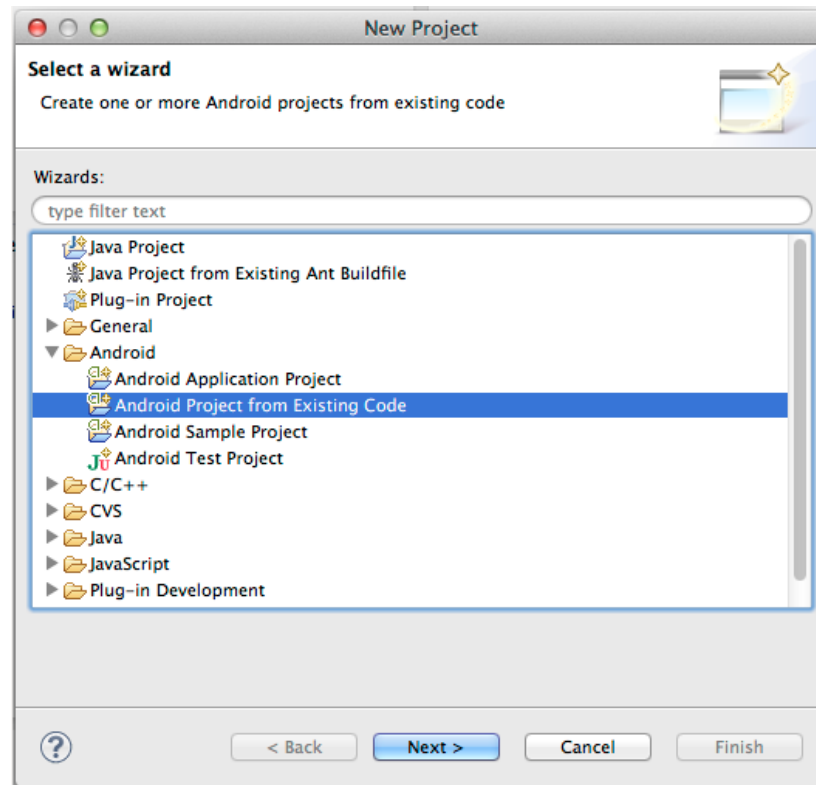# Introduction to PhoneGap

Open with browser

Introduction to PhoneGap

Add platform

```
hilmi@hilmi-book:~$ cd myfirstapp/
hilmi@hilmi-book:~/myfirstapp$ cordova platform add android
npm http GET https://registry.npmjs.org/cordova-android/3.6.4
npm http 304 https://registry.npmjs.org/cordova-android/3.6.4
Creating android project...
Creating Cordova project for the Android platform:
        Path: platforms/android
        Package: com.week11.myfirstapp
        Name: MyFirstApp
        Android target: android-19
Copying template files...
Project successfully created.
```
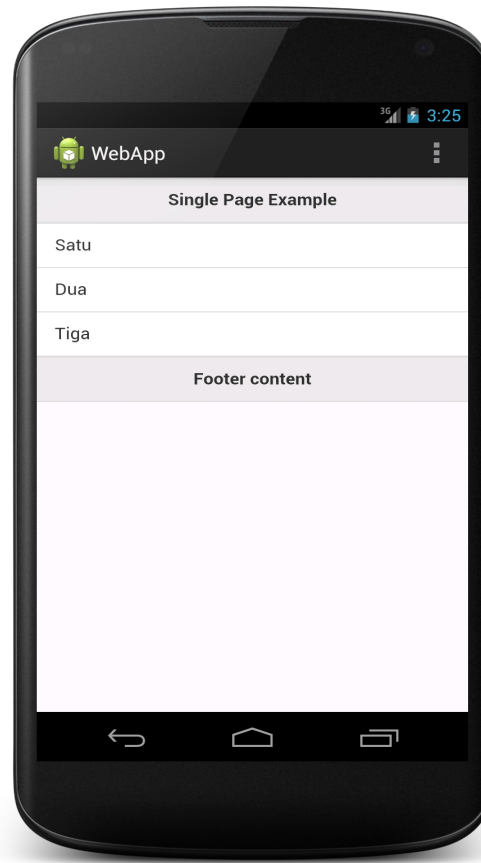
Introduction to PhoneGap

Open with eclipse

Introduction to PhoneGap

Run Project

Using Phonegap API (ex:camera)

Add camera plugin

```
hilmi@hilmi-book:~/myapp$ cordova plugin add org.apache.cordova.camera
```

Access Camera (js)

```javascript
<script type="text/javascript" charset="utf-8">
    var pictureSource;   // picture source
    var destinationType; // sets the format of returned value
    // Wait for PhoneGap to connect with the device
    document.addEventListener("deviceready",onDeviceReady,false);
    // PhoneGap is ready to be used!
    function onDeviceReady() {
        pictureSource=navigator.camera.PictureSourceType;
        destinationType=navigator.camera.DestinationType;
    }
    // Called when a photo is successfully retrieved
    function onPhotoFileSuccess(imageData) {
        var smallImage = document.getElementById('smallImage'); // Get image handle
        smallImage.style.display = 'block';                      // Unhide image elements
        smallImage.src = imageData;                              // Show the captured photo
    }
    // A button will call this function
    function capturePhotoWithFile() {
        navigator.camera.getPicture(onPhotoFileSuccess, onFail, { quality: 50, destinationType: Camera.DestinationType.FILE_URI });
    }
    // Called if something bad happens.
    function onFail(message) {
        alert('Failed because: ' + message);
    }
</script>
```

Using Phonegap API (ex:camera)

Access Camera (html)

```html
<body>
    <button onclick="capturePhotoWithFile();">Capture Photo</button> <br>
    <img style="display:none;width:300px;" id="smallImage" src="" />
</body>
```

Using Phonegap API (ex:camera)

Question?