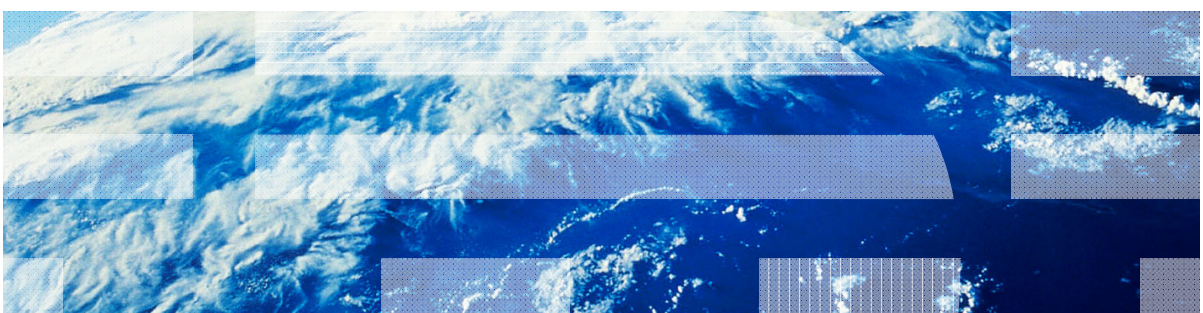
IBM Worklight V5.0.5
Getting Started

Module 8.3 – iOS Development Using the Apache Cordova Plug-in



18 January 2013

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Agenda

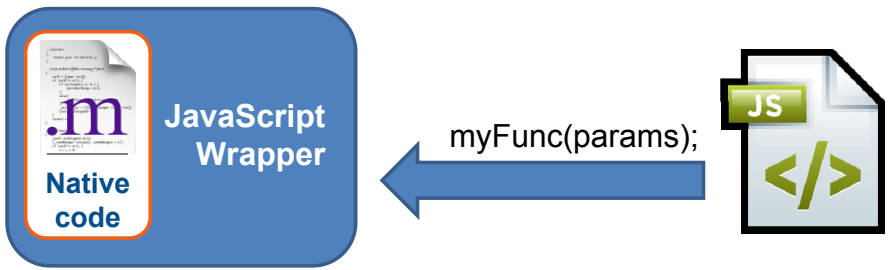
- Apache Cordova plug-in overview
- Implementing an Objective-C code plug-in
- Adding a plug-in to DOM
- Invoking a plug-in from JavaScript

Apache Cordova plug-in overview

- Occasionally within a Worklight® application, developers need to use a specific third-party native library or a device function that is not yet available in Apache Cordova.
- Apache Cordova allows developers to create custom native code blocks and invoke them using JavaScript.
- This technique is called an Apache Cordova plug-in.
- This module demonstrates how to create a simple Apache Cordova plug-in and how to use it in your code.
- More samples can be found in the Apache Cordova documentation at https://github.com/phonegap/phonegap-plugins.

Apache Cordova plug-in overview

- An iOS Apache Cordova plug-in consists of two parts:
  - An Objective-C code which runs natively in iOS.
  - A JavaScript wrapper .
- When both parts are implemented, you can call native code from JavaScript in a simple and familiar way.



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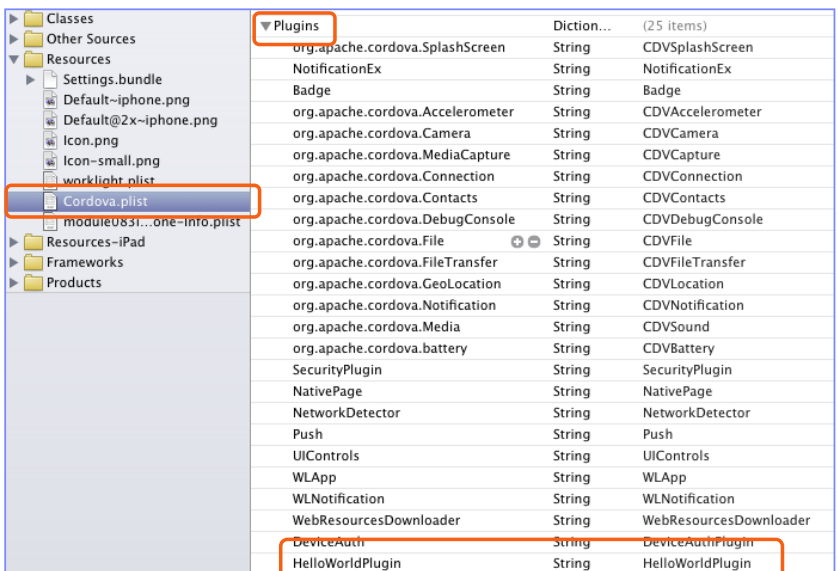
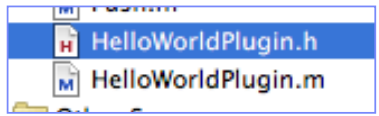
Implementing an Objective-C Code plug-in

- Add your plug-in definition to the Plugins section of the `Cordova.plist` file.
- Use a custom name for the key and the class name of the plug-in for the value.



Implementing an Objective-C Code plug-in

- Start by creating an Objective-C class for a plug-in. Call it HelloWorldPlugin.
- Import the `CDVPlugin.h` and inherit the CDVPlugin class. Add a property for a `callbackId` and required the custom methods.




```
#import <Foundation/Foundation.h>
#import <Cordova/CDVPlugin.h>

@interface HelloWorldPlugin : CDVPlugin{
    NSString *callbackId;
}
-(void)sayHello:(NSMutableArray*)arguments withDict:(NSMutableDictionary*)options;

@property (nonatomic, copy) NSString* callbackId;

@end
```

Implementing an Objective-C Code plug-in

- Implement the method:

```
#import "HelloWorldPlugin.h"

@implementation HelloWorldPlugin

@synthesize callbackId;

-(void)sayHello:(NSMutableArray*)arguments withDict:(NSMutableDictionary*)options{

    self.callbackId = [arguments pop];

    NSString *responseString = [NSString stringWithFormat:@"Hello World, %@", [arguments
        objectAtIndex:0]];

    CDVPluginResult *pluginResult = [CDVPluginResult resultWithStatus:CDVCommandStatus_OK
        messageAsString:responseString];

    [self writeJavascript:[pluginResult toSuccessCallbackString:self.callbackId]];
}

@end
```

Implementing an Objective-C Code plug-in

- Implement the method:

```
#import "HelloWorldPlugin.h"

@implementation HelloWorldPlugin

@synthesize callbackId;

-(void)sayHello:(NSMutableArray*)arguments withDict:(NSMutableDictionary*)options{

    self.callbackId = [arguments pop];

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    CDVPluginResult *pluginResult = [CDVPluginResult resultWithStatus:CDVCommandStatus_OK
        messageAsString:responseString];

    [self writeJavascript:[pluginResult toS
}

@end
```

Function arguments are received as a standard NSMutableArray object.

Implementing an Objective-C Code plug-in

- Implement the method:

```
#import "HelloWorldPlugin.h"

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        objectAtIndex:0]];

    CDVPluginResult *pluginResult = [CDVPluginResult resultWithStatus:CDV
        messageAsString:responseString];

    [self writeJavascript:[pluginResult toS
}

@end
```

The first argument contains a reference to the success and failure callbacks.
Following arguments are custom.

Implementing an Objective-C Code plug-in

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    [self writeJavascript:[pluginResult toSuccessCallbackString:self.callbackId]];
}

@end
```

The pluginResult object is created and populated with a response message (can be string, dictionary, array and so on.)

Implementing an Objective-C Code plug-in

- Implement the method:

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    CDVPluginResult *pluginResult = [CDVPluginResult resultWithStatus: ommandStatus_OK
        messageAsString:responseString];

    [self writeJavascript:[pluginResult toSuccessCallbackString:self.callbackId]];
}

@end
```

The writeJavascript method is used to return a response back to JavaScript. The pluginResult object has the toSuccessCallbackString and the toFailureCallbackString methods.

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Adding a plug-in to DOM

- The second step of the plug-in implementation is to declare it in the DOM and create a wrapper for it:

```
function HelloWorldPlugin(){

}

HelloWorldPlugin.prototype.sa[illegible]lo = function (onSayHelloSuccess, onSayHelloFailure, name){
    cordova.exec(onSayHelloSucc[illegible] onSayHelloFailure, "HelloWorldPlugin", "sayHello", [name]);
};

cordova.addConstructor(function(){
    if (!window.plugins) window.plugins = {
    window.plugins.helloWorldPlugin = new H
});
```

First, create an empty function that will serve as a wrapper for the plug-in.

Adding a plug-in to DOM

- The second step of the plug-in implementation is to declare it in the DOM and create a wrapper for it:

```
function HelloWorldPlugin(){

}

HelloWorldPlugin.prototype.sayHello = function (onSayHelloSuccess, onSayHelloFailure, name){
    cordova.exec(onSayHelloSuccess, onSayHelloFailure, "HelloWorldPlugin", "sayHello", [name]);
};

cordova.addConstructor(funct  {
    if (!window.plugins) windo  gins = {};
    window.plugins.helloWorldPlug  new Hell
});
```

Create a sayHello function using the HelloWorldplugin prototype and hardcode the plug-in class name and action. It invokes the plug-in using cordova.exec() API.

Adding a plug-in to DOM

- The second step of the plug-in implementation is to declare it in the DOM and create a wrapper for it:

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cordova.addConstructor(f tion(){
    if (!window.plugins) ndow.plugins = {
    window.plugins.hello ldPlugin = new H oWorldPlugin();
});
```

Success callback

Failure callback

Plug-in Java class name

Action name

Parameters array

Invoking the plug-in using JavaScript

- The second step of the plug-in implementation is to declare it in the DOM and create a wrapper for it:

```
function HelloWorldPlugin(){

}

HelloWorldPlugin.prototype.sayHello
    cordova.exec(onSayHelloSuccess,
};

cordova.addConstructor(function(){
    if (!window.plugins) window.plugins = {};
    window.plugins.helloWorldPlugin = new HelloWorldPlugin();
});
```

The final step is to add the helloWorldPlugin property to the DOM window.plugins object. From now on, you can invoke the plug-in using window.plugins.helloWorldplugin.sayHello().

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Invoking a plug-in from JavaScript

- Now you are ready to invoke and use the plug-in from JavaScript:

```
function greetMe(){
    window.plugins.helloWorldPlugin.sayHello(sayHelloSuccess, sayHelloFailure, $("#NameInput").val());
}

function sayHelloSuccess(data){
    alert("OK: " + JSON.stringify(data));
}

function sayHelloFailure(data){
    alert("FAIL: " + JSON.stringify(data));
}
```

Success and failure callbacks

Invoking a plug-in from JavaScript

- The sample for this training module can be found in the Getting Started page of the IBM Worklight documentation website at http://www.ibm.com/mobile-docs

Check yourself questions

- In order to recognize a plug-in in a JavaScript application it should be added to:
  - Cordova.plist file.
  - Worklight.plist file.
  - Plugins.plist file.
  - Plug-in will be automatically recognized by JavaScript without adding it to any of above files.
- When should Cordova plug-ins be used?
  - When a developer wants to implement his application in the native code because he is not familiar with JavaScript.
  - When a developer wants his application to look more like a native application.
  - When a developer wants to gain access to OS APIs which are not accessible within the web container.
  - When a developer needs to retrieve data from a remote server.
- What are the components of a Cordova plug-in?
  - Native class implementing the required functionality. It can be called directly from application's JavaScript.
  - Native class implementing the required functionality and a JavaScript wrapper for it. The wrapper's functions can be called from JavaScript.
  - Native class implementing the required functionality, JavaScript wrapper for it and declaration in application-descriptor.xml file.
  - JavaScript wrapper only. Native classes are already provided by Worklight.

Check yourself questions

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