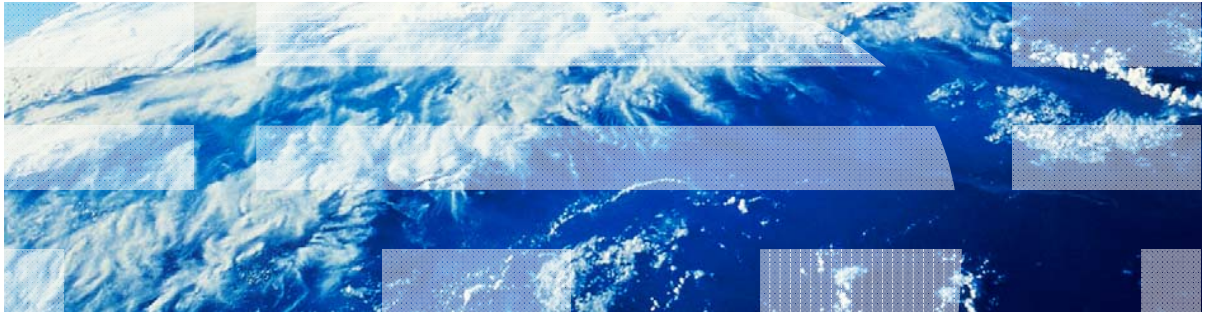


IBM Worklight V6.0.0 Getting Started

Using Java in adapters



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Agenda

- Overview
- Adding custom Java™ classes to your project
- Invoking custom Java classes from adapter
- Invoking adapter procedures from Java code
- Exercise

Overview

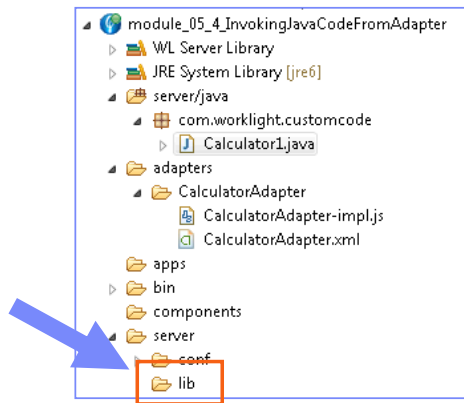
- Adapter is a server-side entity.
- Adapters are implemented in JavaScript™
- Use the adapter to perform some complex functions; for example, encrypting and decrypting data, or generating and validating security tokens.
- Where JavaScript is not enough to implement these functions, or a Java class exists, it is possible to use Java code in your adapter.
- **Important – The Java™ code is an extension of the adapter function and not a replacement.**

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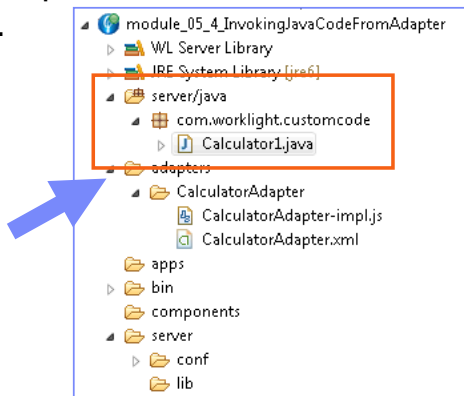
Adding custom Java classes to your project

- To use an existing Java library, add the JAR file to the server\lib folder of your Worklight® Project.
- After the Worklight Adapter is built and deployed, this JAR file is automatically deployed to a Worklight server.



Adding custom Java classes to your project

- To add custom Java code to your project, right-click the server/java folder in your Worklight project and add a Java class file. Name it **Calculator1.java**.
- Important – package name must start with **com**.
- Add this file to a package. In this sample, the `com.worklight.customcode` is used.



Adding custom Java classes to your project

- Add two methods to your Calculator1.java class
 - Static method; does not require a new instance of a class
 - Instance method

```
package com.worklight.customcode;  
  
public class Calculator1 {  
    public static int addTwoIntegers(int first, int second){  
        return first + second;  
    }  
    public int subtractTwoIntegers(int first, int second){  
        return first - second;  
    }  
}
```

- If your Java code has additional dependencies, put the required JARs in the serverlib folder of your Worklight project

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Invoking custom Java classes from the adapter (1 of 2)

- After your custom Java code is created and any required JAR files added, you can reference it from your Worklight Adapter JavaScript as if it was written in Java.

```
function addTwoIntegers(a,b){  
    return {  
        result: com.worklight.customcode.Calculator1.addTwoIntegers(a,b)  
    };  
}  
  
function subtractTwoIntegers(a,b){  
    var calcInstance = new com.worklight.customcode.Calculator1();  
  
    return {  
        result : calcInstance.subtractTwoIntegers(a,b)  
    };  
}
```

Invoke the static Java method as shown, and use the full class name to reference it directly

Invoking custom Java classes from the adapter (2 of 2)

- After your custom Java code is created and any required JAR files added, you can reference it from your Worklight Adapter JavaScript as if it was written in Java

```
function addTwoIntegers(a,b){  
    return {  
        result: com.workli  
    };  
}
```

To use the instance method, create a class instance and invoke the instance method from it

```
function subtractTwoIntegers(a,b){  
    var calcInstance = new com.worklight.customcode.Calculator1();  
    return {  
        result : calcInstance.subtractTwoIntegers(a,b)  
    };  
}
```

Agenda

- Overview
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Invoking adapter procedures from Java code (1 of 4)

- You can also invoke Worklight Adapter procedures from your Java code.

```
public void callProcedure(){
    DataAccessService service = WorklightBundles.getInstance().getDataAccessService();
    String paramArray = "[" + "'param1', 'param2', 'param3'" + "]";
    ProcedureQName procedureQName = new ProcedureQName("adapterName", "procedureName");
    InvocationResult result = service.invokeProcedure(procedureQName, paramArray);
    JSONObject jsonObject = result.toJSON();
    String value = (String)jsonObject.get("key");
}
```

Invoking adapter procedures from Java code (2 of 4)

- You can also invoke Worklight Adapter procedures from your Java code.


```
public void callProcedure(){  
    DataAccessService service = WorklightBundles.getInstance().getDataAccessService();  
    String paramArray = "[" + param1 + "," + param2 + "," + param3 + "]";  
    ProcedureQName procedureQName = new ProcedureQName("adapterName", "procedureName");  
    InvocationResult result = service.invokeProcedure(procedureQName, paramArray);  
    JSONObject jsonObject = result.toJSONObject();  
    String value = (String)jsonObject.get("key");  
}
```

Get a reference to a
DataAccessService instance

Invoking adapter procedures from Java code (3 of 4)

- You can also invoke Worklight Adapter procedures from your Java code.

```
public void callProcedure(){  
    DataAccessService service = WorklightBundles.getInstance().getDataAccessService();  
    String paramArray = "[" + param1 + ", " + param2 + ", " + param3 + "];"  
    ProcedureQName procedureQName = new ProcedureQName("adapterName", "procedureName");  
    InvocationResult result = service.invokeProcedure(procedureQName, paramArray);  
    JSONObject jsonObject = result.toJSONObject();  
    String value = (String)jsonObject.get("key");  
}
```




Create a parameter array and a
ProcedureQName object

Invoking adapter procedures from Java code (4 of 4)

- You can also invoke Worklight Adapter procedures from your Java code.

```
public void callProcedure(){  
    DataAccessService service = WorklightBundles.getInstance().getDataAccessService();  
    String paramArray = "[" + "'param1','param2','param3'" + "];"  
    ProcedureQName procedureQName = new ProcedureQName("adapterName", "procedureName");  
    InvocationResult result = service.invokeProcedure(procedureQName, paramArray);  
    JSONObject jsonObject = result.toJSONObject();  
    String value = (String)jsonObject.get("key");  
}
```



Invoke the procedure and use the
InvocationResult returned

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Exercise

- Implement the addition and removal that is shown in this module as the custom Java code that is called by the adapter.

Invocation Result of procedure: 'addTwoIntegers' from the Worklight Server:

```
{  
  "isSuccessful": true,  
  "result": 7  
}
```

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

Check yourself questions

- Is it possible to use existing JAR functions in my Worklight adapter?
 - No, it is not possible
 - Yes, it is possible: the JAR file is added to the server\lib folder
 - Yes, it is possible: the JAR file is copied to the Eclipse workspace
 - Yes, it is possible: the JAR file is added to the server\java folder
- What types of Java methods can be called from the Worklight adapter?
 - Only static methods that do not require a class instance to be created
 - Only instance methods that are called after the new class instance is created
 - Both static and instance methods can be called from the adapter
 - The adapter has a full access to supplied Java code: static, public, and private methods can be called
- How can Java code replace a Worklight adapter?
 - Remove need for Worklight adapter by routing directly to Java code
 - Set useJavaAdapters property to `true` in the adapter XML file
 - Delete the adapter JS file and declare a Java class in the XML file
 - The Java code is an extension of the adapter function and not a replacement

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