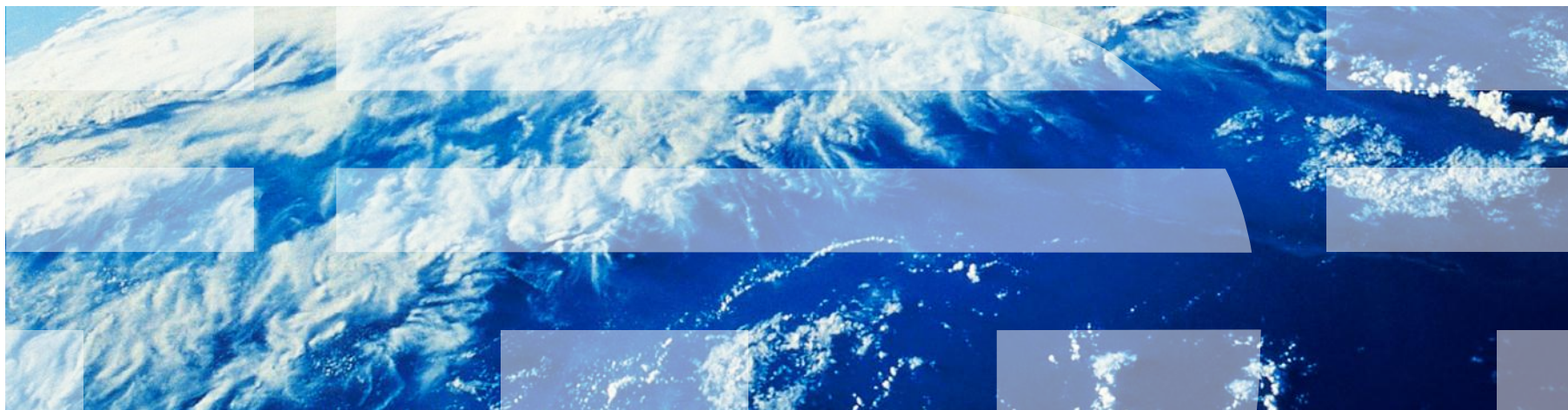


IBM Worklight Foundation V6.2.0

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

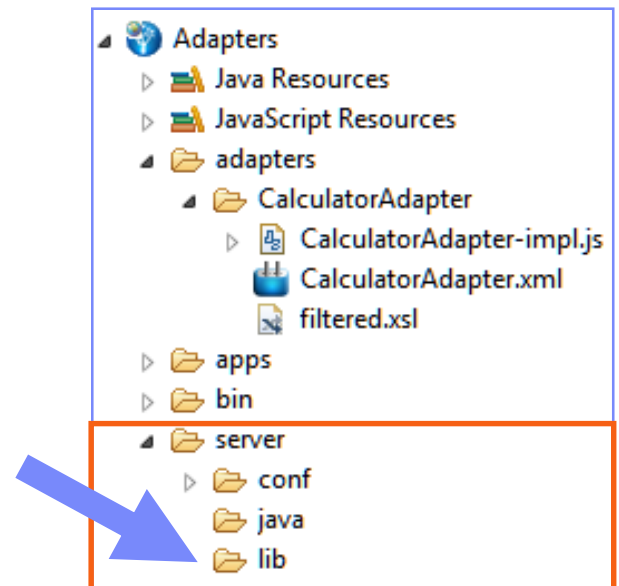
- Adapter is a server-side entity.
- Adapters are implemented in JavaScript™.
- Use the adapter to perform some complex functions; for example, encrypting and decrypting data or generating and validating security tokens.
- Where JavaScript is not enough to implement these functions, or a Java™ class 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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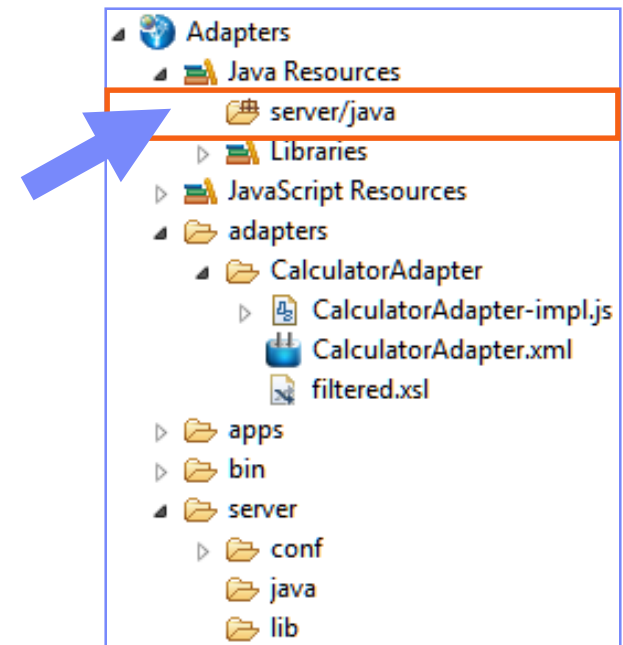
Adding custom Java classes to your project

- 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 Worklight Server.



Adding custom Java classes to your project – continued

- 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 either **com**, **org** or **net**.
- Add this file to a package. In this sample, the `com.worklight.customcode` is used.



Adding custom Java classes to your project – continued

- 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;
import java.util.logging.Logger;

public class Calculator1 {
    private final static Logger logger =
        Logger.getLogger(Calculator1.class.getName());

    public static int addTwoIntegers(int first, int second) {
        logger.info("addTwoIntegers invoked");
        return first + second;
    }

    public int subtractTwoIntegers(int first, int second) {
        logger.info("subtractTwoIntegers invoked");
        return first - second;
    }
}
```

- If your Java code has additional dependencies, put the required JARs in the `server\lib` folder of your Worklight project.

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Invoking custom Java classes from the adapter

- After your custom Java code is created and any required JAR files are 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 – continued

- After your custom Java code is created and any required JAR files are 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)  
    };  
}
```

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

Agenda

- Overview
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Invoking adapter procedures from Java code

- You can also invoke Worklight Adapter procedures from your Java code.
- *This code snippet is not part of the sample project that belongs to this training module.*

```
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 – continued

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

Get a reference to a
DataAccessService instance

```
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 – continued

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

Create a parameter array and a ProcedureQName object

```
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 – continued

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

Invoke the procedure and use the InvocationResult returned

```
public void callProcedure() {  
    DataAccessService service =  
        worklightBundles.getInstance().getDataAccessService();  
    String paramArray = "[ 'param1', 'param2', 'param3' ]";  
    ProcedureQName procedureQName = new ProcedureQName("adapterName",  
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}
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Agenda

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

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 Worklight documentation website at <http://www.ibm.com/mobile-docs>.

Quiz

Test your knowledge. Answers are in the following slide.

- Is it possible to use existing JAR functions in the 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 Worklight adapter?
 - Remove the 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.
 - Java code is an extension of the adapter function and not a replacement.

Quiz - answers

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