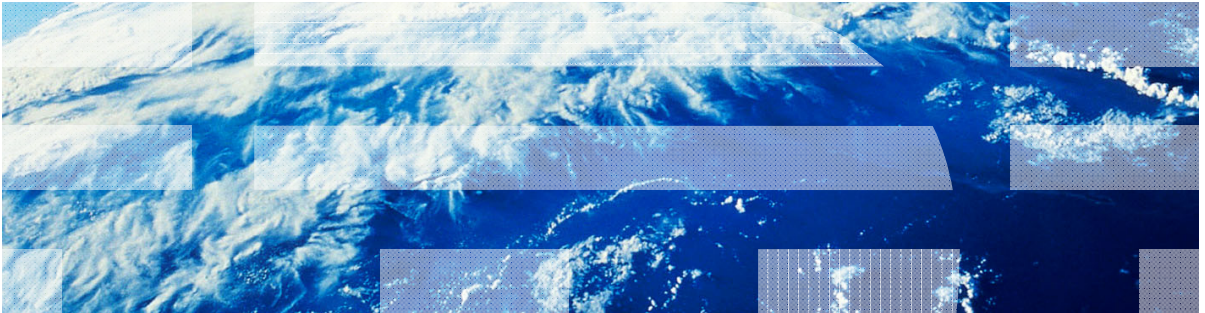


# ***IBM Worklight V5.0.5 Getting Started***

## **Module 5.5 – 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

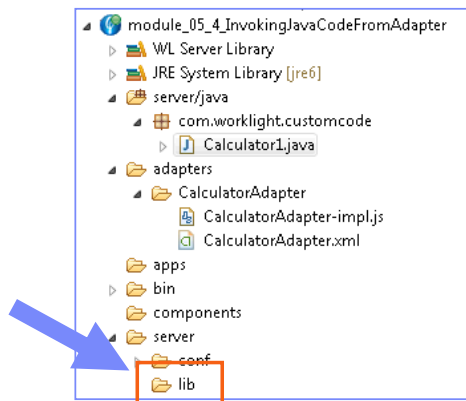
- Adapter is a server-side entity
- Adapters are implemented in JavaScript
- Use the adapter to perform some complex functions; for example, encrypting and decrypting data, or generating and validating security tokens
- Where JavaScript is not enough to implement these functions, or a Java class exists,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

# Agenda

- Overview
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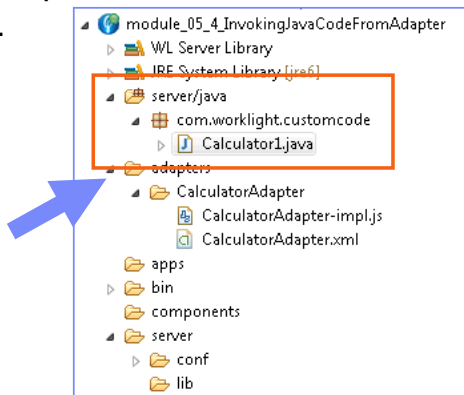
## Adding custom Java classes to your project

- 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




# Agenda

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## Invoking custom Java classes from the adapter

- 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  
  };  
}
```



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

## Invoking custom Java classes from the adapter

- 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 custom Java classes from adapter
- Invoking adapter procedures from Java code
- Exercise

## Invoking adapter procedures from Java code

- 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

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

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    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");  
}
```

Get a reference to a  
DataAccessService instance

## Invoking adapter procedures from Java code

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


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    InvocationResult result = service.invokeProcedure(procedureQName, paramArray);
    JSONObject jsonObject = result.toJSON();
    String value = (String)jsonObject.get("key");
}
```

Create a parameter array and a  
ProcedureQName object

## Invoking adapter procedures from Java code

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

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    InvocationResult result = service.invokeProcedure(procedureQName, paramArray);
    JSONObject jsonObject = result.toJSON();
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}
```



Invoke the procedure and use the  
InvocationResult returned



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## Exercise

- Implement the addition and removal 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 which do not require a class instance to be created
  - Only instance methods which are called after the new class instance has been 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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