JavaScript SQL Adapter

Overview

An IBM MobileFirst Platform Foundation SQL adapter is designed to communicate with any SQL data source. You can use plain SQL queries or stored procedures.

To connect to a database, JavaScript code needs a JDBC connector driver for the specific database type. You must download the JDBC connector driver for the specific database type separately and add it as a dependency in your project. For more information on how to add a dependency, see the Dependencies section in the Creating Java and JavaScript Adapters (../../creating-adapters/#dependencies) tutorial.

In this tutorial and in the accompanying sample, you learn how to use a MobileFirst adapter to connect to a MySQL database.

Prerequisite: Make sure to read the JavaScript Adapters (../) tutorial first.

The XML File

The XML file contains settings and metadata.

1. In the adapter XML file, declare the following parameters:
    - Driver Class
    - Database URL
    - Username
    - Password

```
<?xml version="1.0" encoding="UTF-8"?>
<mfp:adapter name="JavaScriptSQL"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xmlns:mfp="http://www.ibm.com/mfp/integration"
   xmlns:sql="http://www.ibm.com/mfp/integration/sql">

   <displayName>JavaScriptSQL</displayName>
   <description>JavaScriptSQL</description>
   <connectivity>
      <connectionPolicy xsi:type="sql:SQLConnectionPolicy">
         <dataSourceDefinition>
            <driverClass>com.mysql.jdbc.Driver</driverClass>
            <url>jdbc:mysql://localhost:3306/mobilefirst_training</url>
            <user>mobilefirst</user>
            <password>mobilefirst</password>
         </dataSourceDefinition>
      </connectionPolicy>
   </connectivity>

   <procedure name="getAccountTransactions1"/>
   <procedure name="getAccountTransactions2"/>
</mfp:adapter>
```

2. Declare a procedure in the adapter XML file.

```
<procedure name="getAccountTransactions1"/>
```

JavaScript implementation

The adapter JavaScript file is used to implement the procedure logic.
There are two ways of running SQL statements:

- SQL statement query
- SQL stored procedure

1. Use the `WL.Server.createSQLStatement` method to prepare a SQL query. This method must always be called outside the function.
2. Add more parameters, if necessary.

```
//Create SQL query
var getAccountsTransactionsStatement = WL.Server.createSQLStatement(
  "SELECT transactionId, fromAccount, toAccount, transactionDate, transactionAmount, transactionT
ype " +
  "FROM accounttransactions " +
  "WHERE accounttransactions.fromAccount = ? OR accounttransactions.toAccount = ? " +
  "ORDER BY transactionDate DESC " +
  "LIMIT 20;"
);
```

3. Use the `WL.Server.invokeSQLStatement` method to call prepared queries.
4. Return the result to the application or to another procedure.

```
//Invoke prepared SQL query and return invocation result
function getAccountTransactions1(accountId){
  return WL.Server.invokeSQLStatement({
    preparedStatement : getAccountsTransactionsStatement,
    parameters : [accountId, accountId]
  });
}
```

5. To run a SQL stored procedure, use the `WL.Server.invokeSQLStoredProcedure` method. Specify a SQL stored procedure name as an invocation parameter.
6. Add more parameters, if necessary.
7. Return the invocation result to the application or to another procedure.

```
//Invoke stored SQL procedure and return invocation result
function getAccountTransactions2(accountId){
  return WL.Server.invokeSQLStoredProcedure({
    procedure : "getAccountTransactions",
    parameters : [accountId]

  });
}
```

Invocation Results

The result is retrieved as a JSON object:

```
{
  "isSuccessful": true,
  "resultSet": [{
    "fromAccount": "12345",
    "toAccount": "54321",
    "transactionAmount": 180.00,
    "transactionDate": "2009-03-11T11:08:39.000Z",
    "transactionId": "W06091500863",
    "transactionType": "Funds Transfer"
  }, {
    "fromAccount": "12345",
    "toAccount": null,
    "transactionAmount": 130.00,
    "transactionDate": "2009-03-07T11:09:39.000Z",
    "transactionId": "W214122\/5337",
    "transactionType": "ATM Withdrawal"
  }]
}
```


- The `isSuccessful` property defines whether the invocation was successful.
- The `resultSet` object is an array of returned records.
  - To access the `resultSet` object on the client-side: `result.invocationResult.resultSet`
  - To access the `resultSet` object on the server-side: `result.ResultSet`

Sample application

Click to download (https://github.com/MobileFirst-Platform-Developer-Center/Adapters) the Adapters Maven project.

- The Adapters Maven project includes a sample MySQL script in the **Utils** folder, which needs to be imported into your database.
- Make sure that the `mobilefirst@%` user has all access permissions assigned.
- Use either Maven or MobileFirst Developer CLI to build and deploy the adapter (../../creating-adapters/).