

# Scriptella ETL Frequently Asked Questions

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## 1. General

### 1.1. Where can I find documentation on script syntax for driver FOO/BAR/...?

An up to date drivers documentation is available in the [Scriptella Javadoc](#). [Reference Documentation](#) also covers drivers usage and scripts syntax.

### 1.2. Does Scriptella support Microsoft Access?

Microsoft Access and other databases with ODBC interface are supported via ODBC-JDBC bridge driver which comes with Sun's JRE. Download [ODBC example](#) for more details. Connection declaration example:

```
<connection url="jdbc:odbc:DRIVER={Microsoft Access Driver
(*.mdb)};DBQ=Northwind.mdb"/>
```

### 1.3. What is the difference between \$variable / \${expression} and ?variable / ?{expression} syntax.

Binding variables syntax varies between drivers. JDBC drivers use the following rules for properties substitution:

- \$variable - inserts a value of the variable as text content.
- \${expression} - braces are used for JEXL expressions. For example \${column1+column2} inserts a sum of 2 columns.
- ?variable, ?{expression} - syntax is the same as in 2 previous examples, but the result of evaluation is set as a prepared statement parameter, thus increasing the performance and eliminating the need to escape values.

Please note that currently ?{ } syntax is only supported by the JDBC drivers.

See [Reference Manual](#) for additional details.

### 1.4. How to share a mutable variable between script/query elements of an ETL file?

In general such practice is not recommended because often it's a sign of a bad design. It's like using GOTOs or global variables in programming languages. But in several cases using a global variable may help to achieve required goal. We propose 2 approaches:

1. Use etl.globals map to work with global variables. Example \${etl.globals['globalVar']}
2. Another approach is similar to the technique utilized in anonymous inner classes to modify a single-element array declared as a final variable.

The following example demonstrates both approaches:

```
<etl>
  <connection driver="script" id="js"/>
  <connection url="jdbc:..." id="db"/>

  <!-- Set number of records as a global variable -->
  <!-- Note that JEXL syntax etl.globals['globalVar'] does not work in JavaScript -->
  <query connection-id="db">
    select count(id) as c from Errors
    <script connection-id="js">
      etl.globals.put('errorsCount', c);
    </script>
  </query>
```

```

<!-- Then reuse this variable in other parts of ETL file -->
<script connection-id="js" if="etl.globals.get('errorsCount') gt 0">
  java.lang.System.out.println('errors count =' + etl.globals.get('errorsCount'));
</script>

<!-- Alternatively an outer query can be used to share an array based variable between scripts
-->
<query connection-id="js">
  var pseudoGlobalVar = []; //Declare pseudo-global variable available to nested element
  query.next(); //Executes child scripts
  <script> //Updates the variable
    pseudoGlobalVar[0] = 1;
  </script>
  <script> //Outputs updated value of global variable
    java.lang.System.out.println('pseudoGlobalVar[0]=' + pseudoGlobalVar[0]);
  </script>
</query>
</etl>

```

## 1.5. How to call a static method in JEXL expression?

Load a class by name by using `class:forName` Scriptella function

Example. Call `System.getProperty`:

```

${class:forName('java.lang.System').getProperty('propName')}

```

## 1.6. How to escape spaces in field names?

You can use [etl context variable](#) `${etl.getParameter('var name')}` to reference any column names. Additionally several drivers including CSV and JDBC allow referencing columns by an index, i.e. \$1, \$2 ... \$n.

Example:

```

<query connection-id="csv"> <!-- Read CSV file content -->
  <script connection-id="text">
    <!-- Print columns, column 2,3 are referenced by name, 1,4 - by index -->
    $1,$secondColumn,${etl.getParameter('My Column')},$4
  </script>
</query>

```

## 2. SQL

### 2.1. How to create an Oracle trigger (run a PL/SQL block)?

To recognize Oracle PL/SQL statement blocks you'd have to specify `plsql=true` connection property (supported only by [Scriptella Adapter for Oracle](#)). In this case a slash(/) on a single line is used as a statement separator:

```

<connection driver="oracle" ...>
  plsql=true
</connection>
<script>
  CREATE OR REPLACE TRIGGER secure_del_trigger
  BEFORE DELETE
  ON emp
  FOR EACH ROW

```

```

DECLARE
    unauthorized_deletion    EXCEPTION;
BEGIN
    IF <your business rule is violated> THEN
        RAISE unauthorized_deletion;
    END IF;
EXCEPTION
    WHEN unauthorized_deletion
    THEN
        raise_application_error (-20500,
            'This record cannot be deleted');
END;
/

-- Other statements separated with a slash on a single line
</script>

```

If you are using Oracle JDBC driver directly then set the following configuration properties:

```

<connection driver="oracle.jdbc.driver.OracleDriver" ...>
    statement.separator=/
    statement.separator.singleline=true
</connection>

```

This idea is similar to [Ant solution](#).

## 2.2. How to control commit options and transactions?

The following connection parameters are supported by the JDBC bridge:

- `transaction.isolation` - Transaction isolation level name
- `autocommit` - Enables/disables auto-commit mode.
- `autocommit.size` - Enables/disables auto-commit mode.

### Note:

In general avoid using `autocommit.size`, because in this case an ETL process cannot be rolled back correctly. Use this parameter only for performance critical operations (bulk inserts etc.).  
If the `autocommit` is true, then setting `autocommit.size` has no effect.

### Example:

```

<connection driver="auto" url="jdbc:hsqldb:mem:test">
    autocommit.size=4 <!-- Automatically commit after every 4th statement -->
    transaction.isolation=SERIALIZABLE <!-- Sets TX level to Serializable -->
</connection>

```

## 2.3. How to UPSERT (update or insert into a table?)

You can leverage database-specific SQL statements like MERGE or UPSERT. See answers on StackOverflow:

- [Oracle](#)
- [MySQL](#)
- [MS SQL Server](#)

An alternative approach, which is universal but is typically slower, is to use `count(*)` statement and do insert or update accordingly:

```

<query connection-id="in">
  SELECT * FROM Persons_In
  <query connection-id="out">
    SELECT COUNT(*) as cnt FROM Person_Out WHERE Person_ID=?Person_ID
    <!-- If nothing found - insert -->
    <script if="cnt==0">
      INSERT INTO Person_OUT VALUES (Person_ID, Person_Name, ...);
    </script>
    <!-- Otherwise - update -->
    <script if="cnt gt 0">
      UPDATE Person_OUT SET Person_Name=?Person_Name WHERE Person_ID = ?Person_ID;
    </script>
  </query>
</query>

```

### 3. CSV/Text

#### 3.1. How to output null value as empty string in a CSV/Text file.

Suppose we have 3 variables - a='valueA';b=null and c='valueC'.

Here is a [CSV](#) script which outputs them in a single line:

```
$a,$b,$c
```

The output for this script:

```
valueA,$b,valueC
```

By default NULL variables are not substituted, because Scriptella substitution engine cannot distinguish null value from undeclared variable. This behaviour is not always desired. As a workaround you can specify a null\_string connection property as follows:

```

<connection driver="text">
  null_string=<!-- Expand nulls to empty string -->
</connection>

```

And the output is:

```
valueA,,valueC
```