

# Package ‘sjdbc’

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**Title** JDBC Driver Interface

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**Description** Provides a database-independent JDBC interface.

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`executeJDBC`*Execute SQL Query on a JDBC-Compatible Database*

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**Description**

Executes a SQL command on a JDBC-Compatible database.

**Usage**

```
executeJDBC(sqlQuery, driverClass, con, user, password, keepAlive)
```

**Arguments**

<code>sqlQuery</code>	a string containing the SQL query to execute.
<code>driverClass</code>	a string containing the name of the Java class for required JDBC driver.
<code>con</code>	a string containing the JDBC connection string.
<code>user</code>	a string containing the user name with access to database.
<code>password</code>	a string containing the password for the given user name on the database.
<code>keepAlive</code>	a logical. If TRUE, keeps the database connection alive after executing the query. The default is FALSE.

**Details**

Executes the command on the database using the JDBC driver specified in `driverClass`. The required JDBC driver must be loaded in `sjdbc` before it is used. See `loadJDBCdriver` for details.

Database connections are closed by default after executing the query, unless `keepAlive` is set to TRUE. If `keepAlive = TRUE`, the connection remains open, and successive database commands can reuse the open connection if and only if the same values for `driverClass`, `con`, `user`, and `password` are supplied.

**Value**

returns the number of rows affected, if applicable.

**Note**

Some arguments can also be set using `sjdbcOptions`.

**See Also**

[loadJDBCdriver](#), [sjdbcOptions](#)

**Examples**

```
## Not run:
executeJDBC(driverClass="com.microsoft.sqlserver.jdbc.SQLServerDriver",
            con="jdbc:sqlserver://qadb-s2k:1433;databaseName=testdb;user=testqa;password=testqa;",
            user="testqa", password="testqa",
            sqlQuery="UPDATE TEST1 SET Weight = NULL WHERE Weight < 2500")

executeJDBC(driverClass="com.microsoft.sqlserver.jdbc.SQLServerDriver",
            con="jdbc:sqlserver://qadb-s2k:1433;databaseName=testdb;user=testqa;password=testqa;",
            user="testqa", password="testqa",
            sqlQuery="DROP TABLE TEST1")

## End(Not run)
```

---

 exportJDBC

---

*Export To a JDBC-Compatible Database*


---

**Description**

Exports data to a database using JDBC drivers.

**Usage**

```
exportJDBC(data, table, appendToTable = TRUE,
           driverClass = sjdbcOptions()$driverClass, con = sjdbcOptions()$con,
           user = sjdbcOptions()$user, password = sjdbcOptions()$password,
           keepAlive = sjdbcOptions()$keepAlive, preserveColumnCase = FALSE,
           batchSize = sjdbcOptions()$batchSize,
           useTransaction = sjdbcOptions()$useTransaction)
```

**Arguments**

data	the data.frame object to export.
table	a string containing the name of the database table.
appendToTable	a logical. If TRUE (the default), rows are appended to the existing table; if FALSE, any existing table is dropped and an empty table is created prior to exporting the data.
driverClass	a string containing the name of the Java class for the required JDBC driver.
con	a string specifying the JDBC connection string.
user	a string containing the user name with access to database.
password	a string containing the password for the given user name on the database.
keepAlive	a logical. If TRUE, keeps the database connection alive after executing the query. The default is FALSE.

preserveColumnCase	a logical. If TRUE, preserves case-sensitive column names, if supported by database. If FALSE (the default), column name case is converted to the database-specific default.
batchSize	an integer specifying the number of rows sent to the database in each batch, if batch updates are supported by the JDBC driver. Default value is 1000. A value of 0 disables batch exporting.
useTransaction	If TRUE, exports the data as a single transaction, otherwise commits throughout export.

### Details

Exports data to the database using the JDBC driver specified in `driverClass`. The required JDBC driver must be loaded in `sjdbc` before use. See `loadJDBCdriver` for details.

Database connections are closed by default after the query executes, unless `keepAlive` is set to TRUE. If `keepAlive = TRUE`, the connection remains open, and successive database commands can reuse the open connection if and only if the same values for `driverClass`, `con`, `user`, and `password` are supplied.

Setting a larger value for the `batchSize` argument can improve efficiency when you need to export large data tables, if batch updates are supported by the JDBC driver.

### Value

returns the number of rows exported.

### Note

Some arguments can also be set using `sjdbcOptions`.

When you export to a new table (`appendToTable=FALSE`), you might find that the column types of the resulting table are not as desired. Columns containing text data are of type `VARCHAR(255)` (or database equivalent), and numeric and `timeDate` columns attempt to use appropriate database-specific column types. If you want a specific column type or precision in your tables, you should create the table manually using `executeJDBC`, and then append your data to the existing table.

### See Also

[loadJDBCdriver](#), [sjdbcOptions](#), [executeJDBC](#)

### Examples

```
## Not run:
exportJDBC(data=fuel.frame, driverClass="com.microsoft.sqlserver.jdbc.SQLServerDriver",
           con="jdbc:sqlserver://qadb-s2k:1433;databaseName=testdb;user=testqa;password=testqa;",
           user="testqa", password="testqa",
           table="TEST1", append=F)

## End(Not run)
```

---

importJDBC

*Import From a JDBC-Compatible Database*


---

**Description**

Imports data from a database using JDBC drivers.

**Usage**

```
importJDBC(sqlQuery, table, driverClass = sjdbcOptions()$driverClass,
  con = sjdbcOptions()$con, user = sjdbcOptions()$user,
  password = sjdbcOptions()$password,
  keepAlive = sjdbcOptions()$keepAlive, bigdata = FALSE)
```

**Arguments**

sqlQuery	the SQL query string describing the data to be retrieved from the database. Required if table is not provided.
table	a string specifying the name of the table to import. Required if sqlQuery is not provided. Implies sqlQuery="SELECT * FROM <table>".
driverClass	a string containing the name of the Java class for the required JDBC driver.
con	the JDBC connection string.
user	a string specifying the user name with access to the database.
password	a string containing the password for the given user name on the database.
keepAlive	a logical. If TRUE, keeps the database connection alive after executing the query. The default is FALSE.
bigdata	unsupported in this version. Exists for compatibility with Spotfire S+.

**Details**

Imports data from the database using the JDBC driver specified in driverClass. The required JDBC driver must be loaded in sjdbc before use. See loadJDBCdriver for details.

Database connections are closed by default after the query executes, unless keepAlive is set to TRUE. If keepAlive = TRUE, the connection remains open, and successive database commands can reuse the open connection if and only if the same values for driverClass, con, user, and password are supplied.

**Value**

returns a data.frame containing the requested data.

**Time Zone Handling**

Times, Dates, and Timestamps that the database returns are assumed to be GMT. The resulting timeDate objects are created in GMT, without conversion. If you know the time zone of the incoming data, you can specify an alternative time zone for the timeDate objects by setting options("time.zone") prior to import. For further details, see the class.timeDate help file.

**Note**

Character data can be imported either as character or as factor. `importJDBC` uses the value of `options(stringsAsFactors)` to determine how to import the data.

Some arguments can also be set using `sjdbcOptions`.

**See Also**

[loadJDBCdriver](#), [sjdbcOptions](#)

**Examples**

```
## Not run:
importJDBC(driverClass="com.microsoft.sqlserver.jdbc.SQLServerDriver",
  con="jdbc:sqlserver://qadb-s2k:1433;databaseName=testdb;user=testqa;password=testqa;",
  sqlQuery="SELECT * FROM FUEL_FRAME")

importJDBC(driverClass="COM.ibm.db2.jdbc.net.DB2Driver",
  con="jdbc:db2://qadb1:6789/QATESTDB",
  user="testqa",
  password="testqa",
  sqlQuery="SELECT * FROM FUEL_FRAME")

## End(Not run)
```

---

jdbcTimeDate	<i>Convert an <code>splusTimeDate::timeDate</code> object to standard JDBC Timestamp string</i>
--------------	---

---

**Description**

Converts a `timeDate` vector to a character vector in the standard format expected by `java.sql.Timestamp`: `yyyy-mm-dd hh:mm:ss.ffffffffff` (in GMT)

**Usage**

```
jdbcTimeDate(data)
```

**Arguments**

`data` a `timeDate` vector.

**Value**

returns a character vector in the specified format.

**See Also**

[exportJDBC](#)

## Examples

```
my.td <- as.POSIXct("2011/1/1")
jdbcTimeDate(my.td)
```

---

jdbcTypeInfo

*Retrieve Supported Column Type Info from a Database*

---

## Description

Retrieves a table containing the data types supported by the connected database.

## Usage

```
jdbcTypeInfo(driverClass, con, user, password, keepAlive)
```

## Arguments

driverClass	a string specifying the name of the Java class for the required JDBC driver.
con	the JDBC connection string.
user	a string specifying the user name with access to the database.
password	a string containing the password for given the user name on the database.
keepAlive	a logical. If TRUE, keeps the database connection alive after executing the query. The default is FALSE.

## Details

A direct interface to the `java.sql.DatabaseMetaData.getTypeInfo()` method. See the Java documentation for description of the fields in the table. Useful for debugging.

## Value

returns a `data.frame` containing the entire table.

## References

2004. [https://docs.oracle.com/javase/1.5.0/docs/api/java/sql/DatabaseMetaData.html#getTypeInfo\(\)](https://docs.oracle.com/javase/1.5.0/docs/api/java/sql/DatabaseMetaData.html#getTypeInfo()). *Java SE Developer Documentation*. Redwood Shores, CA: Oracle Corporation.

## Examples

```
## Not run:
jdbcTypeInfo(driverClass="com.microsoft.sqlserver.jdbc.SQLServerDriver",
             con="jdbc:sqlserver://qadb-s2k:1433;databaseName=testdb;user=testqa;password=testqa;",
             user="testqa", password="testqa")

## End(Not run)
```

loadJDBCdriver      *Load a JDBC Driver*

---

### **Description**

Makes a JDBC Driver available to the sjdbc package.

### **Usage**

```
loadJDBCdriver(driverJar)
```

### **Arguments**

driverJar      a vector of one or more strings containing the full paths to JDBC driver jars.

### **Details**

Makes the specified driver jars available to the sjdbc package. The driver must be loaded prior to its first use in the TIBCO Enterprise Runtime for R session.

### **Note**

The JDBC drivers need to be loaded each time you use the sjdbc package. To load a driver automatically when loading the sjdbc package, place it in the in the drivers folder where the sjdbc package is installed.

### **Examples**

```
## Not run:  
loadJDBCdriver(file.path("C:", "sqljdbc.jar"))  
  
## End(Not run)
```

---

sjdbc      *SJDBC Package Documentation*

---

### **Description**

The SJDBC Package provides an interface to databases using Java's JDBC connectivity.



## Details

Provides an interface to a databases using JDBC drivers. You can get JDBC drivers from the software providers. Place the JAR or ZIP file containing the JDBC drivers in the `drivers` folder under the package installation directory. All files placed in this directory are added automatically to the Java CLASSPATH when the package is loaded. Alternatively, drivers can be loaded explicitly at runtime using [loadJDBCdriver](#).

The interface has been tested with the following drivers:

- Microsoft SQL Server 2005
  - Connection String: `jdbc:sqlserver://<host>:1433;databaseName=<database>;user=<username>;password=<password>`
  - Driver Class: `com.microsoft.sqlserver.jdbc.SQLServerDriver`
- IBM DB2 Universal Database 7.2
  - Connection String: `jdbc:db2://<host>:6789/<database>`
  - Driver Class: `COM.ibm.db2.jdbc.net.DB2Driver`
- MySQL Connector/J 3.1.14
  - Connection String: `jdbc:mysql://<host>:3306/<database>`
  - Driver Class: `com.mysql.jdbc.Driver`
- Oracle 10g Release 2 10.2.0.4 (ojdbc14.jar)
  - Connection String: `jdbc:oracle:thin:@<host>:1521:<databaseSID>`
  - Driver Class: `oracle.jdbc.OracleDriver`
- PostgreSQL 8.3 (JDBC3 driver 8.3-603)
  - Connection String: `jdbc:postgresql://<host>:5432/<database>`
  - Driver Class: `org.postgresql.Driver`

## Known Issues

- Missing values might not be handled correctly in all cases. `exportJDBC` handles missing (NA) values for integer and numeric class columns by creating NULL values in the database table. Currently, this does not work for character or factor columns. NA values are stored as “NA” in the table, but empty strings (“”) are stored as empty strings.

---

`sjdbcCloseConnection`    *Close a Persistent Database Connection*

---

## Description

Closes any open persistent database connection.

## Usage

```
sjdbcCloseConnection()
```

**Details**

Closes a connection that was made persistent previously using the `keepAlive` argument to one of the database functions.

This function is used primarily by `importJDBC`, `exportJDBC`, and `executeJDBC` to close connections after execution. It rarely needs to be called directly.

**Value**

returns no value.

**See Also**

[importJDBC](#), [exportJDBC](#), [executeJDBC](#)

**Examples**

```
## Not run:
# close an open connection
sjdbcCloseConnection()

## End(Not run)
```

---

sjdbcGetResultSet

*Get a ResultSet From Static Java Class*

---

**Description**

Retrieves a `ResultSet` previously stored in a static instance of `SJDBCResultSetUtilities` class as a `data.frame`.

**Usage**

```
sjdbcGetResultSet(key, unregister = TRUE, default.num.rows = NULL,
                 start.at.first=TRUE, rows.to.read=-1)
```

**Arguments**

<code>key</code>	a string containing the key into the hash table in <code>SJDBCResultSetUtilities</code> where the result was stored previously.
<code>unregister</code>	a logical value. If <code>TRUE</code> (the default), specifies that the <code>ResultSet</code> should be removed from the hash table after the data is returned.
<code>default.num.rows</code>	an integer containing the number of rows. When the <code>ResultSet</code> is of type <code>ResultSet.TYPE_FORWARD_ONLY</code> , the number of rows cannot be determined until after all of the data has been retrieved. If the <code>ResultSet</code> has more than the default number, the array sizes are doubled whenever the current capacity is reached. If the <code>ResultSet</code> is not of <code>TYPE_FORWARD_ONLY</code> , this argument is not used.

`start.at.first` a logical. If TRUE (the default), set the ResultSet to start with the first row before reading. if FALSE, start with the current row.

`rows.to.read` an integer specifying the maximum number of rows to read. If less than zero, read all rows in the result set.

### Details

This function is called by `importJDBC` and usually is not called directly.

### Value

returns a `data.frame` containing the ResultSet.

### See Also

[importJDBC](#)

### Examples

```
## Not run:  
sjdbcGetResultSet("resultid")  
  
## End(Not run)
```

---

sjdbcOptions

*Package Options and Defaults*

---

### Description

Stores persistent options and defaults for sjdbc package functions.

### Usage

```
sjdbcOptions(...)
```

### Arguments

... you can provide no arguments. You can provide a list or vector of character strings as the only argument, or you can provide arguments in `name=value` form. See the **VALUE** and **SIDE EFFECTS** sections for more information.

**Value**

The `sjdbcOptions` function always returns a list, even if the list is of length 1.

- if no arguments are given, returns a list of current values for all options.
- if a character vector is given as the only argument, returns a list of current values for the options named in the character vector.
- if an object of mode "list" is given as the only argument, its components become the values for options with the corresponding names. The function returns a list of the option values before they were modified. Usually, the list given as an argument is the return value of a previous call to `sjdbcOptions`.
- if arguments are given in `name=value` form, `sjdbcOptions` changes the values of the specified options and returns a list of the option values before they were modified.

**Side Effects**

When options are set, the `sjdbcOptions` function changes a list named `.sjdbcOptions` in the session frame (frame 0). The components of `.sjdbcOptions` are all of the currently defined options. If `sjdbcOptions` is called with either a list as the single argument or with one or more arguments in `name=value` form, the options specified are changed or created.

**Supported Options**

<code>driverClass</code>	a string containing the name of the Java class for the required JDBC driver.
<code>con</code>	the JDBC connection string.
<code>user</code>	a string specifying the user name with access to database. <i>Note:</i> Some drivers do not require this option.
<code>password</code>	a string containing the password for the given user name on the database. <i>Note:</i> Some drivers do not require this option.
<code>keepAlive</code>	a logical. if TRUE, keeps the database connection alive after executing the query. Defaults to FALSE.
<code>batchSize</code>	an integer containing the number of rows exported per batch in <code>exportJDBC</code> . Defaults to 1000.
<code>useTransaction</code>	export data as a single transaction. Defaults to TRUE.

**See Also**

This function closely mimics the behavior of the `options` function in base TIBCO Enterprise Runtime for R.

**Examples**

```
# set a single option
sjdbcOptions(driverClass="COM.ibm.db2.jdbc.net.DB2Driver")

# set multiple options
sjdbcOptions(driverClass="COM.ibm.db2.jdbc.net.DB2Driver",
             con="jdbc:db2://qadb1:6789/QATESTDB",
             user="testqa",
             password="testqa")
```

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