Development Container

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HARTING MySQL for HAIIC MICA

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MySQL v1.0 for HAIIC MICA Guide

Content

1. MySQL container basics

1.1. Overview

MySQL is an open-source relational database management system (RDBMS). In July 2013, it was the world's second most widely used RDBMS, and the most widely used open-source client–server model RDBMS. It is named after co-founder Michael Widenius's daughter, My. The SQL acronym stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation. For proprietary use, several paid editions are available, and offer additional functionality.

Note that the MySQL container is currently based on MySQL v5.7.10. For more information visit https://www.mysql.com/.

1.2. Installation of the MySQL container

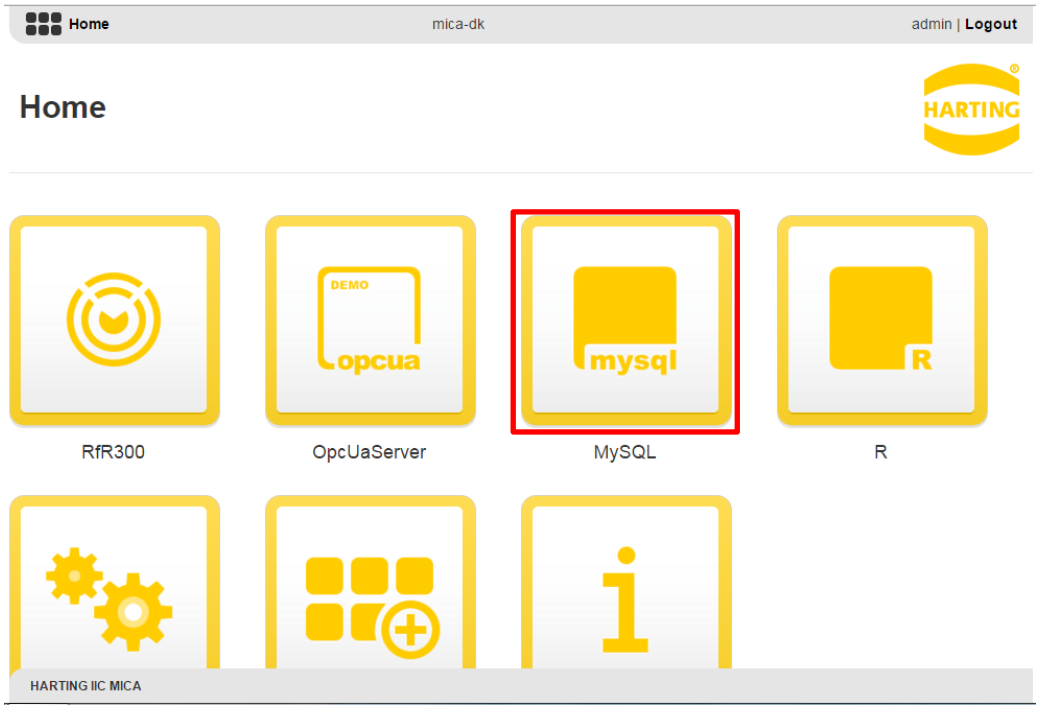

Figure 1: IIC MICA home screen including a (highlighted) MySQL container

The installation and configuration routine of the MySQL container follows the standard routine as provided by the IIC MICA and can be found in the “MICA Programming Guide”.

2. Description of the MySQL container

2.1. Overview of the user interface

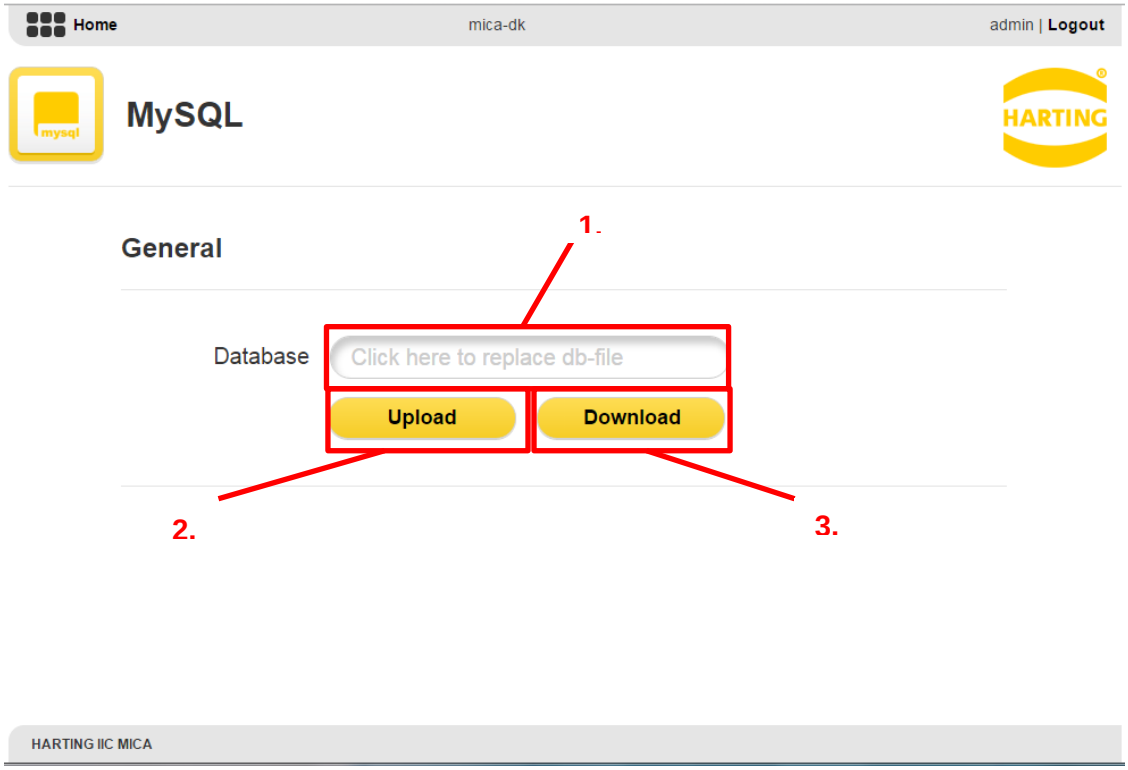

Figure 2: MySQL container user-interface

The user-interface of the MySQL container consists of a single section “General” including the entry “Database”, which can be used to import/export a MySQL database dumps to/from the container. The user-interface structure can be described as follows:

1.) **Database file text field**: The text field can be used to set the MySQL database dump file you want to upload to the container.

2.) **Upload**: The upload button engages the upload of the database dump file that has been specified in **1.)** into the database `default_db`.

3.) **Download**: The download button engages the download of the database `default_db` dump file to your file system.

2.2. Uploading a MySQL database dump

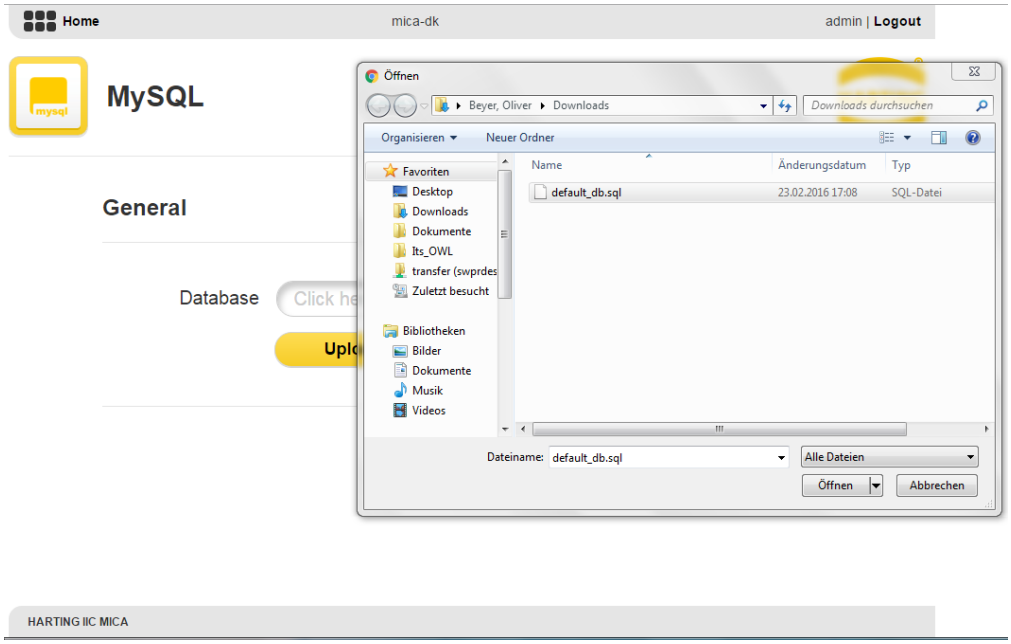

Figure 3: Uploading a MySQL database dump to the MySQL container

In order to upload a new configuration to the container you have to either click the configuration file text field (see Section 2.1) and select a configuration file as shown in Figure 3, or you simply drag & drop the file into the text field. After selecting a file the file name is shown in the configuration file text field.

When pressing the button “Upload” the selected file will be sent to the container and stored internally. After the transmission ended a symbol to the right side of the database file text file will indicate if the transmission was successful or failed, as shown in Figure 4. The container will furthermore replace the database `default_db` as soon as the file transmission ended.

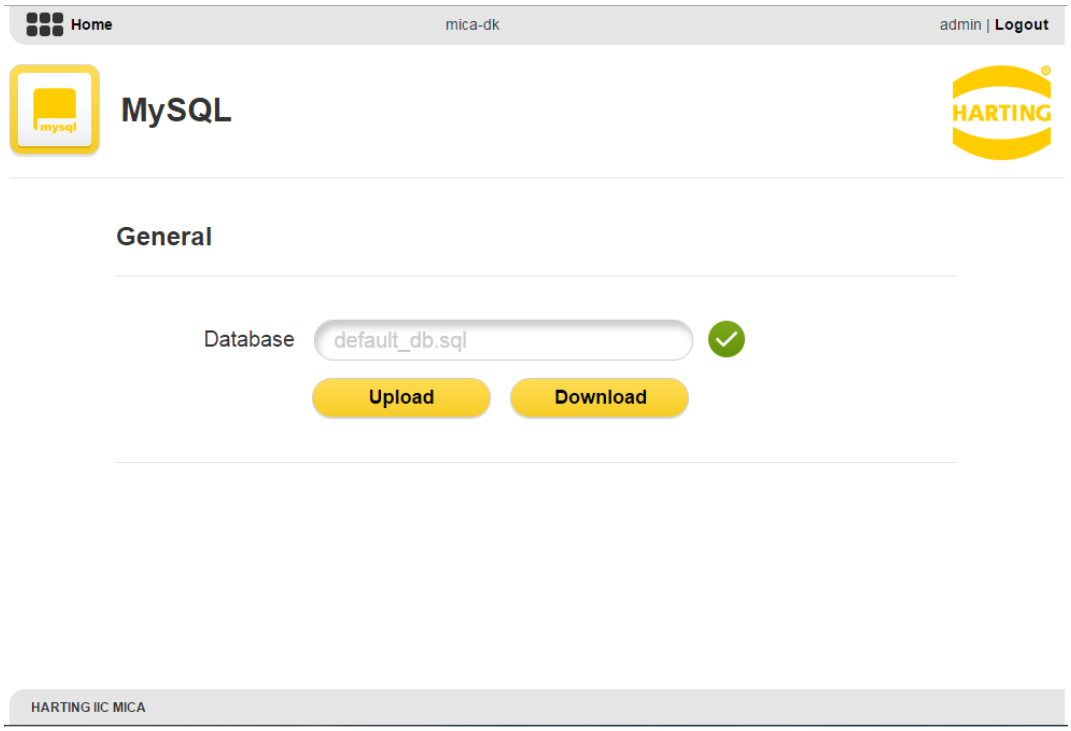

Figure 4: Successful upload of a MySQL database dump file to the MySQL container

2.3. Downloading a MySQL database dump

You can download database dump of `default_db` by simply clicking the download button. After having downloaded the database file you can import it into any other MySQL database.

3. MySQL usage example

3.1. Log into the MySQL container

At first we will log into the container via SSH, as described in the “MICA Programming Guide”. The MySQL client provides an interactive interpreter that we want to utilize in this short programming example. In the following we will query all fields of the table `components` within the database `default_db`.

3.2. Start the MySQL client

After we logged into the container we will simply type "`mysql -u root`" into our terminal to access the MySQL client interpreter and see the following output. (Note that user root is only allowed to access MySQL within the container)

```
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.10 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

No entry for terminal type "xterm-256color";
using dumb terminal settings.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

3.3. Access a database

In this step of our simple example we will access the database `default_db`. Therefore, we type `use default_db;` into the terminal and press enter to execute the command. As result we should see the following lines.

```
mysql> use default_db;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
```

3.4. Query the fields of a table

In the last step of our example we will query all fields of the table `components`. Type `SELECT * FROM components;` followed by enter to see the following lines.

```
mysql> SELECT * FROM components;
+----+-------+---------------------+-----------+
| id | name  | timestamp           | value     |
+----+-------+---------------------+-----------+
|  1 | gpio1 | 2016-02-23 15:10:39 | 12.873455 |
|  2 | gpio2 | 2016-02-23 15:10:54 | -9.934653 |
+----+-------+---------------------+-----------+
2 rows in set (0.00 sec)
```

4. Services provided by the MySQL container

4.1. Overview

The MySQL container allows to access its functionality as provided by the user-interface remotely over HTTP requests. The container therefore utilizes the token provided by the IIC MICA host to authenticate the request. For more information see the Section “Single sign-on (SSO)” of the “MICA Programming Guide”.

4.2. Usage of the services

The following HTTP-requests are provided by the container:

1. Upload: Uploading a MySQL database dump file for the `default_db` database.
   Method: `POST`
   URL : `dbupload?token=XXX`

2. Download: Receiving the content of the `default_db` database.
   Method: `POST`
   URL : `dbdownload?token=XXX`

4.3. Connecting to the MySQL server remotely

You can access the server using the standard port `3306`. The user `mica` has full access to the database `default_db`. In order to add/modify databases, users and settings you have to log into the container and start the MySQL client using the `root` user as described in Section 3.2.

Credentials for remote access to database `default_db`:

User : `mica`
PW : `mica`