Manual UltraQC

The UltraQC application consist of two main sections: the data input interface, and the report. The data interface is used for inputting data into the UltraQC database, which can be easily automated once UltraQC is fully deployed.

Detailed technical instructions are provided at the end of the document. These should not be required for viewing the report.

Installation instructions:

These are instructions for setting up the Node.js and MySQL servers. - MySQL server version 5.7 or 8.0. For versions above 5.7, you may have to select the **Legacy Authentication** method when prompted. - Node.js and NPM version: 8.11.3 (LTS) and npm version 5.6.0.

Installation for these varies depending on your Linux distribution, detailed instructions for specific distributions are available online. When using the `apt-get` package manager included in many popular Linux distributions, the latest versions of the `npm` and `mysql-server` packages can be installed. `Node.js` does not necessarily require installation, and can be used normally by replacing the `node` command with the path to `/bin/node`, which should be present in the extracted folder after downloading `Node.js` from the website listed above.

To specify how the Node.js server should connect to the database, an `auth.json` file may be provided. This file should be created in the `\server\` folder, as a sibling of `app.js`. An example of this file, with the default port of `3306` and `root` as both the username and password, is shown below. No `auth.json` file needs to be created if the connect information matches the default settings listed here.

```
{
    "host": "127.0.0.1",
    "port": "3306",
    "user": "root",
    "password": "root"
}
```

- By default, the server should run on default port `3306` with the password set to `root`.

Running the server

MySQL

The MySQL service should be started automatically after installing. To manually start the service, the follow the instructions for your operating system below. For potential issues during this stage, see the end of this document.

Windows

The name of the `MySQL` service can be specified during installation, by default, it is `MySQL80`.
To start the server: `net start MySQL80`
To stop the server: `net stop MySql80`

Linux

To start the server: `sudo service mysql start`
To stop the server: `sudo service mysql stop`

Node.js

1. Open a terminal in the `\server\` folder, or open a terminal elsewhere and navigate to the correct path.
2. Before running the Node.js server for the first time, run the command `npm install` to ensure all required depencies are present on your system. If the `npm` command is not known, ensure that the Node Package Manager (NPM) was installed correctly.
3. Run `node app.js -build-database` to build the required database. Note that this will delete all data currently present in the `ultraqc_db` database, and as such, should only be run the first time. If the `node` command is not known, ensure that Node was installed correctly.
4. To launch the server without building the database, simply run `run app.js`

Inserting data

To run the data insertion application, Java 8 (or newer) is required. It can be downloaded and installed from https://java.com/en/download/.

1. Open a terminal in the `\data\` folder, or open a terminal elsewhere and navigate to the correct path.
2. Run `java -jar UltraQC.jar` to run the application. You will see a list of all available commandline options.

Example

- If you have a folder `C:\quality control\data\` containing a list of samples to insert, the parameter `-f` will be `-f "C:\quality control\data\"`
- To indicate this data is from the first of December 2016, add the parameter `-d 2016-12-01`
- To indicate the species of this data is Cucumber, add the paramter `-s "Cucumber"`
- To indicate the Node.js server is running on `http://www.example.com/ultraqc`, add the parameter `-u "http://www.example.com/ultraqc"`

In this case, you will have to run the command:

```
java -jar UltraQC.jar -f "C:\quality control\data\" -d 2016-12-01 -s "Cucumber" -u
"http://www.example.com/ultraqc"
```

Potential issues

Unsupported Authentication Method

This is an error thrown by the MySQL server when connecting to it using an incompatible protocol, it will appear in the Node.js console. Currently, no conventional MySQL connection packages for Node.js support the newer authentication method. When this error occurs, there are several solutions:

1. Add a line with `"secure_auth": false` to the auth.json file. This is only supported on a very limited number of versions.
2. Reinstall the application in a way that allows you to enable the "Legacy Authentication Method" option
3. Use an older version of MySQL (before 5.7 should work, such as version 5.4)