# MySQL Instance Creation and Configuration Guide for SAS Opera

This document describes the steps for creating and configuring MySQL instances for the SAS Opera product, including setting up directories, files, and necessary configurations to run multiple instances under the `C:\SAS Opera\Companies` directory.

## Prerequisites:

- MySQL Server installed on the machine.
- Administrator privileges for file system access and MySQL configurations.
- SAS Opera product installed and running in the `C:\SAS Opera\Companies` directory.
- Batch files, Python scripts, and `.sql` files located in the `C:\SAS Opera\Companies\Company_X\system\config\schema\scripts` directory.

## 1. Setting up Directories

1. **Create a new company directory under `Companies`:**
    a. Navigate to `C:\SAS Opera\Companies` and create a directory for the new company (e.g., `Company_2`).
    b. The full path will be: `C:\SAS Opera\Companies\Company_2`.

2. **Create subdirectories under the new company folder:**
    a. Inside the `Company_2` directory, create the following directories:
        i. `system`
        ii. `system\application`
        iii. `system\config`
        iv. `system\db_instances`
3. **Create subdirectories under `system\config`:**
    a. Create the following subdirectories under `C:\SAS Opera\Companies\Company_2\system\config`:
        i. `instance`
        ii. `schema`

iii. schema\scripts

4. **Create subdirectories under `schema\scripts`:**
    a. Create the following directories under `C:\SAS Opera\Companies\Company_2\system\config\schema\scripts`:
        i. `create`
        ii. `delete`
5. **Place SQL scripts in the `create` directory:**
    a. Place all `.sql` files (e.g., `000_create_schemas.sql` to `0014_fin_purchase_invoice_tables.sql`) into the `create` directory.
6. **Place the delete script in the `delete` directory:**
    a. Place `0000_delete_schemas.sql` in the `delete` directory.
7. **Place `.py` and `.bat` files in the `schema` directory:**
    a. Place the following files in `C:\SAS Opera\Companies\Company_2\system\config\schema`:
        i. `create_schemas_py.py`
        ii. `create_schemas_bat.bat`
        iii. `delete_schemas_bat.bat`
        iv. `delete_schemas_py.py`

## 2. Creating Instance Folders

1. **Manually Create Instance Folders** (or use the batch script):
    a. Navigate to `C:\SAS Opera\Companies\Company_2\system\config`.
    b. Create instance directories manually (e.g., `instance0`, `instance1`, `instance2`, `instance3`).
    c. Alternatively, you can use the batch file `01create_instance_folders.bat` to automatically create the following directories:
        i. `C:\SAS Opera\Companies\Company_2\system\db_instances\instance0`
        ii. `C:\SAS Opera\Companies\Company_2\system\db_instances\instance1`
        iii. `C:\SAS Opera\Companies\Company_2\system\db_instances\instance2`
        iv. `C:\SAS Opera\Companies\Company_2\system\db_instances\instance3`

**Note**: This batch file will also create the `data`, `logs`, and `uploads` directories inside each instance folder.

## 3. Configuring MySQL Instance

1. **Copy `my.ini` to the instance folder:**
    a. Manually copy `my.ini` from the MySQL installation directory (`C:\ProgramData\MySQL\MySQL Server 8.0`) to the `C:\SAS Opera\Companies\Company_2\system\db_instances\instance1` folder.
    b. Alternatively, run `02_copy_config_file.bat` from `C:\SAS Opera\Companies\Company_2\system\config`.
2. **Modify `my.ini` File:**
    a. Open `my.ini` in `C:\SAS Opera\Companies\Company_2\system\db_instances\instance1` and modify the port number and other necessary configurations.
    b. Example: Update the `port` entry to a unique value, such as `3322`.

**Note**: The batch script `03_change_myini_manually.bat` can help automate parts of this process, but it may require manual adjustments.

3. **Initialize Data Folder:**
    a. To initialize the data directory for the instance:
        i. Open a command prompt and run the following command:
        ```
        mysqld --initialize --datadir=C:\SAS Opera\Companies\Company_2\system\db_instances\instance1\data
        ```
        ii. Alternatively, run the batch file `04_initialize_data_folder.bat` from `C:\SAS Opera\Companies\Company_2\system\config`.

**Note**: The initialization will create a `DELPHI-K.err` file in the `data` directory, containing the root password for the MySQL instance (e.g., `bfXda>*=9jk`).

## 4. Creating and Starting Services

1. **Install MySQL Services:**
    a. To install the service for the MySQL instance, run the following command:

```
mysqld --install VEDAM_instance1 --defaults-file=C:\SAS
Opera\Companies\Company_2\system\db_instances\instance1\my.i
ni
```

b. Alternatively, run the batch file `05_create_services.bat` from `C:\SAS Opera\Companies\Company_2\system\config`.

2. **Start MySQL Services:**
   a. To start the MySQL service for `instance1`, run:

```
net start VEDAM_instance1
```

b. Alternatively, run the batch file `06_start_services.bat` from `C:\SAS Opera\Companies\Company_2\system\config`.

## 5. Configuring MySQL User

1. **Connect to MySQL as root:**
   a. Use the root password obtained from the `DELPHI-K.err` file to log into MySQL:

```
mysql -u root -p -P 3322
```

2. **Create Application User:**
   a. Create a new MySQL user for the application:

```
ALTER USER 'root'@'localhost' IDENTIFIED BY 'welcome';
CREATE USER 'vedamc0in1'@'localhost' IDENTIFIED BY
'welcome';
GRANT ALL PRIVILEGES ON *.* TO 'vedamc0in1'@'localhost' WITH
GRANT OPTION;
```

**Note**: Adjust the `port` number (`3322` in this example) based on the instance you are configuring.

3. **Create `.instance.cnf` File:**

a. In the `C:\SAS Opera\Companies\Company_2\system\db_instances\instance1` folder, create the `.instance.cnf` file with the following content:

```
[client]
user=vedamc0in1
password=welcome
host=localhost
port=3322
```

## 6. Stopping and Removing Services (Optional)

1. **Stop MySQL Service:**
   a. To stop the MySQL service for a specific instance:

```
net stop VEDAM_instance1
```

   b. Alternatively, run the batch file `07_stop_services.bat` from `C:\SAS Opera\Companies\Company_2\system\config`.
2. **Remove MySQL Service:**
   a. To remove the MySQL service:

```
mysqld --remove VEDAM_instance1
```

   b. Alternatively, run the batch file `08_remove_services.bat` from `C:\SAS Opera\Companies\Company_2\system\config`.

## Conclusion

This document outlines the necessary steps for creating and configuring MySQL instances for the SAS Opera product. Follow these instructions carefully to ensure a smooth setup of MySQL services, user configurations, and database instances.

## 6. Appendix

More detailed steps can be found in the mysql instances configuration.txt file