The CS Department maintains a database server (DB Server) for CPSC 321 running MariaDB (mariadb.com), version 10.3.31. MariaDB is an open-source, community-developed fork of MySQL. This document provides basic information on how to connect to the DB Server and how to get started in MariaDB. For detailed questions regarding account setup and issues connecting to the DB Server, please contact the CS department’s system administrator, Jason Schnagl (schnagl@gonzaga.edu). The DB Server can be accessed in a number of ways. The following describes one basic way to connect to the server to get started on your homework as well as some basic MariaDB shell commands. Here, we will use a two step process to login to MariaDB running on the server: (1) ssh into ada; and then (2) login to MariaDB using the mysql command. It is possible to streamline this process to connect directly from your own computer using port forwarding and the MySQL client program. Instructions for “directly” connecting to the DB server in this way will be provided separately. This purpose of this document is to explain the basics for connecting to the DB server.

**Connecting to the server:** First, login to ada using the ssh command from a terminal window (in Linux or MacOS, or a cmd shell in Windows). Once you are on ada, run the following mysql command:

```
mysql -p -h cps-database
```

This command allows you to remotely connect to MariaDB, which is running on port 3306 of the server located at cps-database (IP address 147.222.165.7). Note that the -p flag is required. It states that you need to provide a password to login to the database server (which is the case for the setup on cps-database). Once you run this command, you will be prompted for your MariaDB password, which is your GU Username + GU ID number (e.g., smith12345678). As an example:

```
bowers@ada:~$ mysql -u bowers -p -h cps-database
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 43
Server version: 5.5.5-10.3.9-MariaDB-1:10.3.9+maria~bionic-log
Copyright (c) 2000, 2018, Oracle and/or its affiliates. All rights reserved.
Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysql>
```

Once logged in, you will see the mysql shell prompt.

**Changing your password:** The first thing you should do after logging in for the first time is change your MariaDB password. To do this, run the following command in MariaDB, replacing “username” with your GU Username and “newpassword” with your new password:

```
mysql> SET PASSWORD FOR "username"@"%" = password("newpassword");
```

**Getting Started with MariaDB:** At the mysql prompt, you will need to tell the system which database to use. To see a list of databases use the show command:
You have privileges to use your own database with your username followed by an underscore ("_") followed by "DB". To select your database, use the \texttt{use} command (replacing "bowersDB" with your database):

```sql
mysql> use bowersDB;
...
Database changed
mysql>
```

You should have full privileges to create and modify tables in your database. To see the list of tables within your database, use the \texttt{show} command:

```sql
mysql> show tables;
show tables;
Empty set (0.00 sec)
```

Note that since we haven’t defined any tables yet, you will only see “Empty set”. You can now enter SQL commands directly at the MariaDB prompt. To exit MariaDB, use the \texttt{exit} command:

```sql
mysql> exit;
Bye
```

\textbf{Running an SQL Script}: An SQL script is a text file containing a sequence of SQL commands. You can run an SQL script directly within MariaDB. First, either upload an SQL script to ada or edit your SQL script directly on ada. After logging into the MariaDB server, use the \texttt{source} command to execute your SQL script. For example, assuming the following simple script is stored in a file called \texttt{my-script.sql}:

```sql
DROP TABLE IF EXISTS test; -- remove table each time script is run
CREATE TABLE test ( 
    id INT, -- simple id attribute
    val VARCHAR(3), -- simple 3-character string value
    PRIMARY KEY (id)
); 
INSERT INTO test VALUES (1,'abc'), (2,'def'), (3,'ghi');
```

This script can be executed from within MariaDB as follows.

```sql
mysql> use bowersDB;
mysql> source my-script.sql;
Query OK, 0 rows affected (0.00 sec)
```
This example assumes the script is saved in the same directory that the mysql command is run from. If the file were in a directory called `my-scripts` and the mysql command is run from the parent directory (i.e., from the parent directory, when you run the `ls` command you see the `my-scripts` directory), then you would load the script as follows:

```
mysql> source my-scripts/my-script.sql
```

**Connecting Directly to the Database Server.** You can install and run the `mysql` command directly from your own machine. Once installed, you can do all of the same commands above to connect to the `cps-database` (bypassing the connection to `ada` first). Note that for this to work, you must be connected to the Internet from Gonzaga. Note that if you use your own machine to connect to the database server, you will likely need to specify your GU login name as follows (replacing `username` with your actual GU login):

```
mysql -u username -p -h cps-database
```

You can also connect to the database using the [MySQL Workbench](https://www.mysql.com/products/workbench/) graphical IDE. The same settings are used within MySQL Workbench as described above.