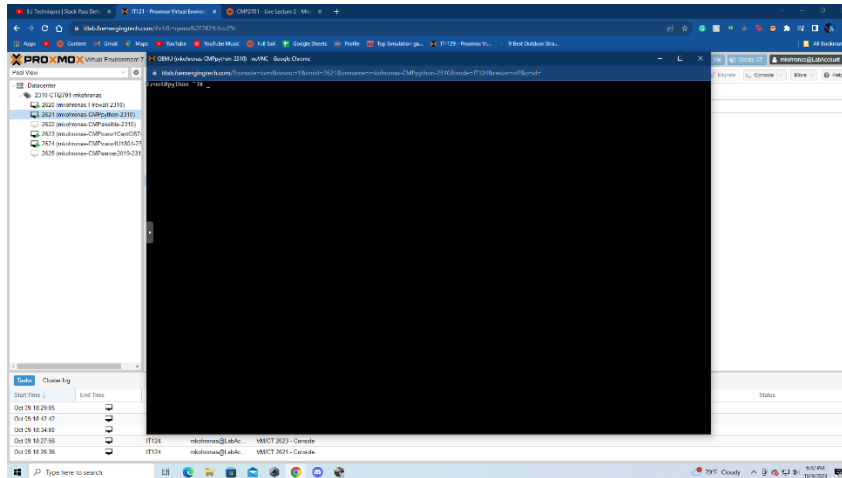


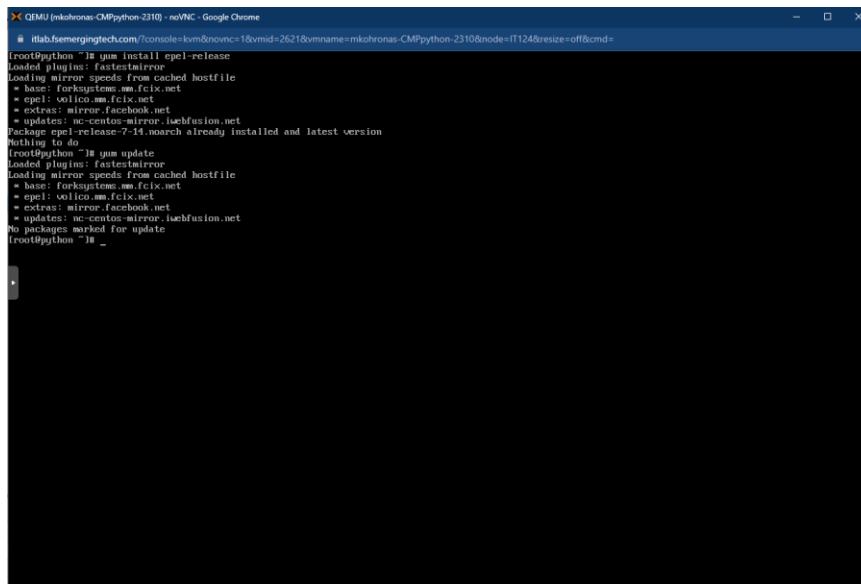
Michael Kohronas

10/9/2023

1) Power on VM



2) Add the EPEL repository.



3) Install SQL database software (MariaDB)

```
QEMU (mkchonos: CMPython-2310) - noVNC - Google Chrome
# itabfemergingtech.com/?console=kvm&noVnc=1&vmid=2621&vmname=mkchonos: CMPython-2310&node=IT124&resize=off&cmd=
(18/18): perl-FIRPC-0.2828-14.e17.noarch.rpm | 36 kB 00:00:00
Total 15 MB/s | 21 MB 00:00:01
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : perl-Data-Dumper-2.145-3.e17.x86_64 1/18
Installing : 1:perl-Compress-Raw-Zlib-2.861-4.e17.x86_64 2/18
Installing : 1: mariadb-5.5.68-1.e17.x86_64 3/18
Installing : perl-Met-Daemon-0.48-5.e17.noarch 4/18
Installing : perl-Compress-Raw-Bzip2-2.861-3.e17.x86_64 5/18
Installing : perl-IO-Compress-2.861-2.e17.noarch 6/18
Installing : perl-FIRPC-0.2828-14.e17.noarch 7/18
Installing : perl-DBI-1.627-4.e17.x86_64 8/18
Installing : perl-DBD-PgSQL-4.823-6.e17.x86_64 9/18
Installing : 1: mariadb-server-5.5.68-1.e17.x86_64 10/18
Verifying : perl-Compress-Raw-Bzip2-2.861-3.e17.x86_64 1/18
Verifying : perl-Met-Daemon-0.48-5.e17.noarch 2/18
Verifying : perl-Data-Dumper-2.145-3.e17.x86_64 3/18
Verifying : 1: mariadb-server-5.5.68-1.e17.x86_64 4/18
Verifying : perl-DBD-PgSQL-4.823-6.e17.x86_64 5/18
Verifying : 1: mariadb-5.5.68-1.e17.x86_64 6/18
Verifying : 1:perl-Compress-Raw-Zlib-2.861-4.e17.x86_64 7/18
Verifying : perl-DBI-1.627-4.e17.x86_64 8/18
Verifying : perl-IO-Compress-2.861-2.e17.noarch 9/18
Verifying : perl-FIRPC-0.2828-14.e17.noarch 10/18
Installed:
mariadb-server.x86_64 1:5.5.68-1.e17
Dependency Installed:
mariadb.x86_64 1:5.5.68-1.e17 perl-Compress-Raw-Bzip2.x86_64 0:2.861-3.e17 perl-Compress-Raw-Zlib.x86_64 1:2.861-4.e17
perl-DBD-PgSQL.x86_64 0:4.823-6.e17 perl-DBI.x86_64 0:1.627-4.e17 perl-Data-Dumper.x86_64 0:2.145-3.e17
perl-IO-Compress.noarch 0:2.861-2.e17 perl-Met-Daemon.noarch 0:0.48-5.e17 perl-FIRPC.noarch 0:0.2828-14.e17
Complete!
[root@python ~]# systemctl start mariadb
[root@python ~]# systemctl enable mariadb
Created symlink from /etc/systemd/system/multi-user.target.wants/mariadb.service to /usr/lib/systemd/system/mariadb.service.
[root@python ~]# mysql
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 2
Server version: 5.5.68-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
```

4) Type exit to leave the SQL console.

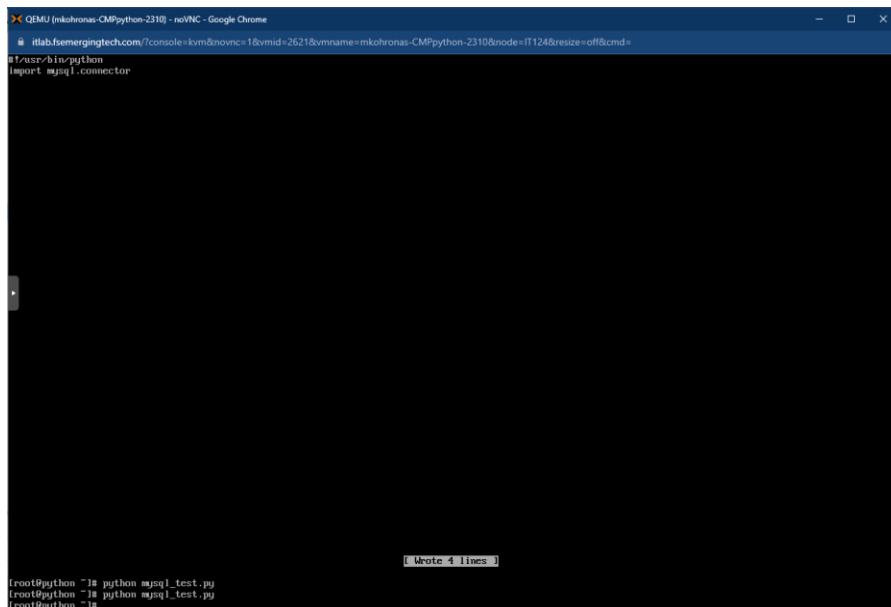
```
QEMU (mkchonos: CMPython-2310) - noVNC - Google Chrome
# itabfemergingtech.com/?console=kvm&noVnc=1&vmid=2621&vmname=mkchonos: CMPython-2310&node=IT124&resize=off&cmd=
(15 MB/s | 21 MB 00:00:01
Total 15 MB/s | 21 MB 00:00:01
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : perl-Data-Dumper-2.145-3.e17.x86_64 1/18
Installing : 1:perl-Compress-Raw-Zlib-2.861-4.e17.x86_64 2/18
Installing : 1: mariadb-5.5.68-1.e17.x86_64 3/18
Installing : perl-Met-Daemon-0.48-5.e17.noarch 4/18
Installing : perl-Compress-Raw-Bzip2-2.861-3.e17.x86_64 5/18
Installing : perl-IO-Compress-2.861-2.e17.noarch 6/18
Installing : perl-FIRPC-0.2828-14.e17.noarch 7/18
Installing : perl-DBI-1.627-4.e17.x86_64 8/18
Installing : perl-DBD-PgSQL-4.823-6.e17.x86_64 9/18
Installing : 1: mariadb-server-5.5.68-1.e17.x86_64 10/18
Verifying : perl-Compress-Raw-Bzip2-2.861-3.e17.x86_64 1/18
Verifying : perl-Met-Daemon-0.48-5.e17.noarch 2/18
Verifying : perl-Data-Dumper-2.145-3.e17.x86_64 3/18
Verifying : 1: mariadb-server-5.5.68-1.e17.x86_64 4/18
Verifying : perl-DBD-PgSQL-4.823-6.e17.x86_64 5/18
Verifying : 1: mariadb-5.5.68-1.e17.x86_64 6/18
Verifying : 1:perl-Compress-Raw-Zlib-2.861-4.e17.x86_64 7/18
Verifying : perl-DBI-1.627-4.e17.x86_64 8/18
Verifying : perl-IO-Compress-2.861-2.e17.noarch 9/18
Verifying : perl-FIRPC-0.2828-14.e17.noarch 10/18
Installed:
mariadb-server.x86_64 1:5.5.68-1.e17
Dependency Installed:
mariadb.x86_64 1:5.5.68-1.e17 perl-Compress-Raw-Bzip2.x86_64 0:2.861-3.e17 perl-Compress-Raw-Zlib.x86_64 1:2.861-4.e17
perl-DBD-PgSQL.x86_64 0:4.823-6.e17 perl-DBI.x86_64 0:1.627-4.e17 perl-Data-Dumper.x86_64 0:2.145-3.e17
perl-IO-Compress.noarch 0:2.861-2.e17 perl-Met-Daemon.noarch 0:0.48-5.e17 perl-FIRPC.noarch 0:0.2828-14.e17
Complete!
[root@python ~]# systemctl start mariadb
[root@python ~]# systemctl enable mariadb
Created symlink from /etc/systemd/system/multi-user.target.wants/mariadb.service to /usr/lib/systemd/system/mariadb.service.
[root@python ~]# mysql
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 2
Server version: 5.5.68-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> exit
Bye
[root@python ~]#
```

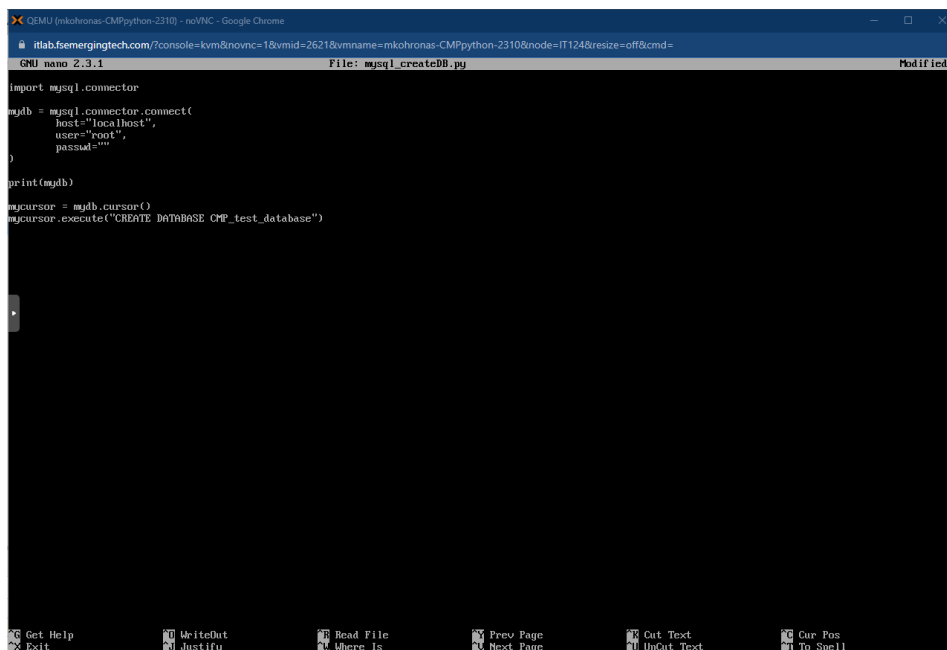
5) Install the MySQL-connector-python.



A terminal window titled "QEMU (mkchronas-CMPython-2310) - noVNC - Google Chrome" showing the installation of MySQL-connector-python. The user is in a shell with the prompt "# mkh.fsemergingtech.com". The command "apt-get install python-mysqldb" is entered, followed by "python --help" and "python --help | grep mysql". The output shows the command "python -m pip install mysql-connector-python". The user then enters "python -m pip install mysql-connector-python" and the output shows the package being installed. A status bar at the bottom indicates "Wrote 4 lines".

```
# mkh.fsemergingtech.com
apt-get install python-mysqldb
python --help
python --help | grep mysql
python -m pip install mysql-connector-python
python -m pip install mysql-connector-python
Wrote 4 lines
```

6) Create a python script which creates a new database



A terminal window titled "QEMU (mkchronas-CMPython-2310) - noVNC - Google Chrome" showing the creation of a new database using a Python script. The user is in a shell with the prompt "# mkh.fsemergingtech.com". The command "nano mysql_createdb.py" is entered, followed by the script content. The script imports mysql.connector, connects to the database, and creates a new database named "CMP_test_database". The user then enters "python mysql_createdb.py" and the output shows the database being created. A status bar at the bottom indicates "Modified".

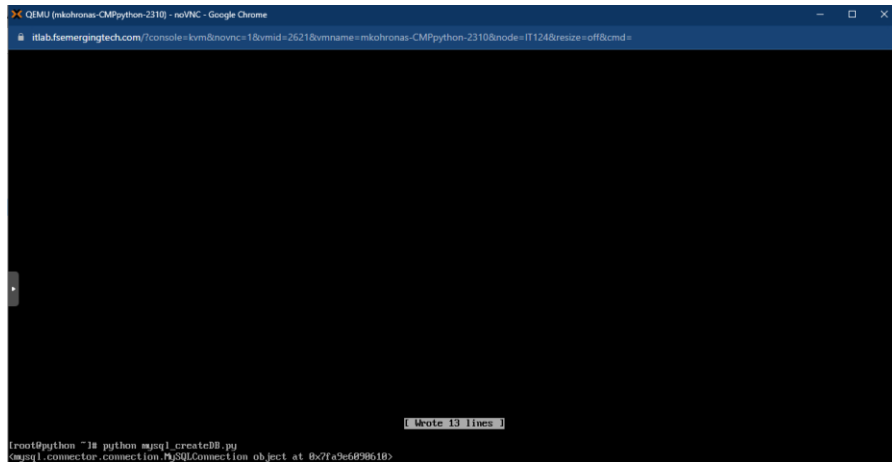
```
# mkh.fsemergingtech.com
nano mysql_createdb.py
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="root",
    passwd=""
)

print(mydb)

mycursor = mydb.cursor()
mycursor.execute("CREATE DATABASE CMP_test_database")
python mysql_createdb.py
Modified
```

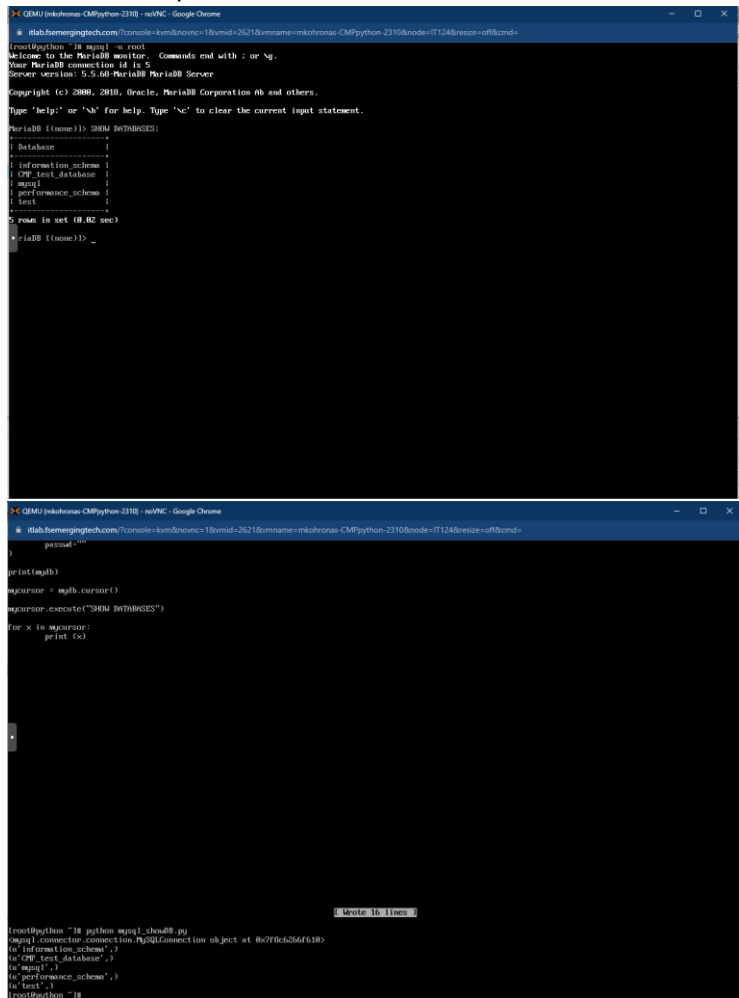
7) Run the python Script.



A terminal window titled "QEMU (mkohronas-CMPython-2310) - noVNC - Google Chrome" with the address bar showing "itlab.fsemmeringtech.com/?console=kvm&novnc=1&vmid=2621&vmmname=mkohronas-CMPython-2310&node=IT124&resize=off&cmd=". The terminal shows a root prompt where the command "python mysql_createDB.py" has been executed. The output is "mysql.connector.connection.MySQLConnection object at 0x2fa9e6d98c10". A status bar at the bottom indicates "Write 13 lines".

```
root@python ~# python mysql_createDB.py
mysql.connector.connection.MySQLConnection object at 0x2fa9e6d98c10
```

8) Login to MySQL as root and show databases. Then create a python script that can show databases for you.



Two screenshots of a terminal window. The top screenshot shows a MySQL prompt where the user has logged in as root and entered the command "SHOW DATABASES;". The output lists several databases: information_schema, mysql, performance_schema, and test. The bottom screenshot shows a Python script being executed. The script imports mysql.connector, creates a connection, and uses a cursor to execute "SHOW DATABASES;". It then iterates over the results and prints each database name. The output of the script matches the output from the MySQL prompt. A status bar at the bottom indicates "Write 16 lines".

```
root@python ~# mysql -u root
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 5
Server version: 5.5.40-MariaDB MariaDB Server

Copyright (c) 2000, 2010, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| test |
+-----+
5 rows in set (0.02 sec)

MySQL [(none)]>

root@python ~# python mysql_showDB.py
mysql.connector.connection.MySQLConnection object at 0x2f8c266f610
('information_schema',)
('mysql',)
('performance_schema',)
('test',)
root@python ~#
```

9) Create a snapshot of the virtual machine.

The screenshot displays the Proxmox Virtual Environment (VE) interface. The main window shows the configuration for Virtual Machine 2621 (mkohronas-CMPpython-2310) on node IT124. The 'Take Snapshot' dialog is open, showing a list of existing snapshots:

Name	RAM	Date/Status	Description
initialstate	No	2023-09-25 23:57:48	Initial state at start of class
A116_Save	Yes	2023-10-02 19:20:52	Assignment 1.6 Save
AZL6	Yes	2023-10-09 18:41:07	Assignment 2.6 Save
AZL7	Yes	2023-10-09 18:59:28	Assignment 2.7
NOW			You are here!

Below the dialog, the 'Tasks' section shows a log of recent operations:

Start Time	End Time	Node	User name	Description	Status
Oct 09 18:29:05		IT128	mkohronas@LabAc...	VMCT 2624 - Console	
Oct 09 18:56:55		IT124	mkohronas@LabAc...	VMCT 2623 - Console	
Oct 09 18:42:42		IT124	mkohronas@LabAc...	VMCT 2621 - Console	
Oct 09 18:34:00		IT124	mkohronas@LabAc...	VMCT 2621 - Console	
Oct 09 18:26:36		IT124	mkohronas@LabAc...	VMCT 2621 - Console	